

SEMICONDUCTOR GENERAL CATALOG

Diodes

Rectifiers
Variable Capacitance Diodes
Radio-Frequency Switching Diodes
Zener Diodes
Switching Diodes
Schottky Barrier Diodes
Photodiodes

Rectifiers

General-Purpose Rectifiers

Average Forward Current (A)	Package	Peak Repetitive Reverse Voltage (V)				Remarks
		100	400	600	800	
0.3	VS-6		TPC6K01			Independent 2-in-1
0.5	HM-FLAT		HMG01			Independent 2-in-1
0.7	S-FLAT	CRG01	CRG02 CRG07 ○			
1	S-FLAT		CRG03 CRG09 ◆	CRG04	CRG05	
	M-FLAT		CMG05 CMG07	CMG06 CMG08		
2.0	M-FLAT		CMG02	CMG03		

○: The definitions of the absolute maximum junction and storage temperatures are based on AEC-Q101

◆: High ESD immunity

• The products shown in bold are also manufactured in offshore fabs.

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(For Strobe Discharge Circuits)

Peak Repetitive Surge Current IFRM (A)	Peak Repetitive Reverse Current VRRM (V)	Part Number	Package	Remarks
150	400	CMC02	M-FLAT	CM = 500 μF

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Super-Fast-Recovery Diodes (S-FRDs)

Average Forward Current (A)	Package	Reverse Recovery Time trr (ns) (Max)	Peak Repetitive Reverse Voltage (V)				
			400	600	800	900	1000
0.5	S-FLAT	100			CRF02		
	M-FLAT				CMF04	CMF03	CMF05 ☆
0.7	S-FLAT			CRF03			
1	M-FLAT			CMF02			
2.0	M-FLAT			CMF01			

☆: Dry-packed

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High-Efficiency Diodes (HEDs)

		Package	Reverse Recovery Time trr (ns) (Max)	Peak Repetitive Reverse Voltage (V)				
				200	300	400	600	
Single	Average Forward Currents (A)	0.5	35	CRH02				
		1		S-FLAT	CRH01			
				M-FLAT	CMH04		CMH05A	
	2	M-FLAT	50			CMH05		
			35	CMH07		CMH08A		
	50				CMH08			
	35		CMH01		CMH02A			
	3	50			CMH02			
		5	L-FLAT	35	CLH01	CLH02 ☆	CLH03 ☆	
	CLH05				CLH06 ☆	CLH07 ☆		

☆: Dry-packed

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Variable Capacitance Diodes

Variable Capacitance Diodes (Diodes for Electronic Tuning)

Part Number	VR (V)	CT (pF)	VR (V)	CT (pF)	VR (V)	Applications
1SV225	32	18.5 to 21	3	6.6 to 7.7	30	FM Hi-Fi tuners
1SV228	15	28.5 to 32.5	3	11.7 to 13.7	8	FM car radios, portable radios
JDV3C34	12	67.9 to 72.1	2	26.1 to 27.8	6	FM tuners

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Part Number					VR (V)	CT (pF)	VR (V)	CT (pF)	VR (V)	Applications
Package										
USC	ESC	USQ	fSC	SC2						
1SV324	1SV325				10	44 to 49.5	1	9.2 to 12.2	4	VCXO
	JDV2S36E				10	44 to 49.5	1	5.4 to 7.3	6	VCXO
1SV231					30	41 to 49.5	2	2.7 to 3.4	25	CATV tuners
1SV288	1SV290B				30	41 to 49.5	2	2.5 to 3.2	25	CATV tuners
1SV262	1SV282				34	33 to 38	2	2.6 to 3.0	25	CATV tuners
1SV269	1SV283B				34	29 to 34	2	2.5 to 2.9	25	CATV tuners
1SV232					30	28 to 32	2	2.75 to 3.1	25	CATV tuners
1SV215					30	26 to 32	2	2.5 to 3.2	25	CATV tuners
1SV322	1SV323				10	26 to 30	1	6 to 7.1	4	VCXO
1SV304	1SV305	JDV4P08U	JDV2S08FS		10	17.3 to 19.3	1	5.3 to 6.6	4	VHF/UHF VCO
	1SV331				10	17 to 19	1	4.25 to 5.43	4	VCXO
			JDV2S26FS	JDV2S26SC	10	15.35 to 16.31	1	5.27 to 5.60	4	VHF/UHF VCO
1SV270	1SV281				10	15 to 17	1	7.3 to 8.7	4	VHF/UHF VCO
1SV276	1SV284				10	15 to 17	1	7.0 to 8.5	4	VHF/UHF VCO
	1SV286				30	14.5 to 16.1	2	1.56 to 1.86	20	CATV converters
1SV214	1SV278B				30	14.16 to 16.25	2	2.11 to 2.43	25	VHF/UHF TV tuners
1SV229	1SV279		JDV2S41FS*		15	14 to 16	2	5.5 to 6.5	10	VHF/UHF VCO
				JDV2S31SC	10	9.93 to 10.77	1	4.37 to 4.93	4	VHF/UHF VCO
1SV310	1SV311				10	9.7 to 11.1	1	4.45 to 5.45	4	VHF/UHF VCO
	1SV314		JDV2S10FS		10	7.3 to 8.4	0.5	2.75 to 3.4	2.5	VHF/UHF VCO
				JDV2S38SC*	10	7 to 7.74	0.5	2.76 to 3.12	2.5	VHF/UHF VCO
	JDV2S71E				30	6 to 7.2	1	0.49 to 0.64	25	UHF/SHF tuners
	1SV329		JDV2S13FS		10	5.7 to 6.7	1	1.85 to 2.45	4	VHF/UHF VCO
			JDV2S25FS	JDV2S25SC	10	5.62 to 5.99	1	1.91 to 2.12	4	VHF/UHF VCO
			JDV2S07FS		10	4.0 to 4.9	1	1.85 to 2.35	4	L-Band VCO
	1SV285				10	4.0 to 4.9	1	1.85 to 2.35	4	VHF/UHF VCO
	JDV2S05E		JDV2S05FS		10	3.85 to 4.55	1	1.94 to 2.48	4	VHF/UHF VCO
1SV239	1SV280		JDV2S40FS		15	3.8 to 4.7	2	1.5 to 2.0	10	L-Band VCO
			JDV2S29FS	JDV2S29SC	10	3.59 to 3.87	1	1.26 to 1.40	4	VHF/UHF VCO
1SV245	1SV309				30	3.31 to 4.55	2	0.61 to 0.77	25	BS tuners
	JDV2S01E				10	2.85 to 3.45	1	1.35 to 1.81	4	VHF/UHF VCO

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*: New product

Radio-Frequency Switching Diodes

Radio-Frequency Switching Diodes

Part Number	Applications		V _R (V)	I _R (Max)		V _F (Max)		C _T (Typ.)		r _s (Typ.)			Package	
				(μ A)	V _R (V)	(V)	I _F (mA)	(pF)	V _R (V)	(Ω)	I _F (mA)	f (MHz)		
1SS314	TV band switch	Single	30	0.1	15	0.85	2	0.7	6	0.5	2	100	USC	
1SS381			30	0.1	15	0.85	2	0.7	6	0.5	2	100	ESC	
1SS268			30	0.1	15	0.85	2	0.8	6	0.6	2	100	S-MINI	
1SS269		Twin	30	0.1	15	0.85	2	0.8	6	0.6	2	100	S-MINI	
1SS312			30	0.1	15	0.85	2	0.8	6	0.6	2	100	USM	
1SS313			30	0.1	15	0.85	2	0.8	6	0.6	2	100	USM	
1SS364			30	0.1	15	0.85	2	0.85	6	0.6	2	100	SSM	
JDP2S12CR *	Switch, ATT	Single	180	10	50	1.0	50	1.0	40	0.4	10	100	S-FLAT	
1SV307			30	0.1	30	1.0	50	0.5	1	1	10	100	USC	
1SV308			30	0.1	30	1.0	50	0.5	1	1	10	100	ESC	
JDP2S01E			30	0.1	30	0.95	50	0.65	1	0.65	10	100	ESC	
JDP2S02AFS			30	0.1	30	0.94	50	0.3	1	1	10	100	fSC	
JDP2S05FS			20	0.1	20	0.94	50	0.32	1	1.5	1	100	fSC	
JDP2S05CT			Switch	20	0.1	20	0.94	50	0.32	1	1.5	1	100	CST2
JDP2S02ACT				30	0.1	30	1.0	50	0.3	1	1	10	100	CST2
JDP2S05SC			Switch, ATT	20	0.1	20	0.95	50	0.24	1	1.5	1	100	SC2
JDP2S08SC			Switch	30	0.1	30	0.95	50	0.21	1	1	10	100	SC2
JDP3C02AU *	Switch, ATT	Twin	30	0.05	30	0.89 (Typ.)	50	0.28	1	1.06	10	100	USM	
JDP4P02AT	30	0.1	30	1.0	50	0.3	1	1	10	100	TESQ			
JDP4L08CTC *	Switch	2 in 1	30	0.1	30	0.95	50	0.21	1	1	10	100	CST4C	
JDP4P08CTC *			30	0.1	30	0.95	50	0.21	1	1	10	100	CST4C	

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*: New product

Zener Diodes

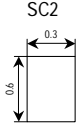
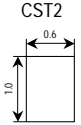
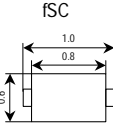
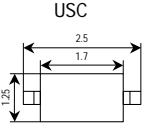
Zener Diodes

Power Dissipation P (W)	0.7	1.0	2.0
Zener Voltage Vz (V) (Typ.)	S-FLAT (SMD)	M-FLAT (SMD)	M-FLAT (SMD)
6.2	CRY62		
6.8	CRY68		
7.5	CRY75		
8.2	CRY82		
9.1	CRY91		
10	CRZ10		
11	CRZ11		
12	CRZ12	CMZB12	CMZ12
13	CRZ13	CMZB13	CMZ13
15	CRZ15	CMZB15	CMZ15
16	CRZ16	CMZB16	CMZ16 CMZM16 (Note)
18	CRZ18	CMZB18	CMZ18
20	CRZ20	CMZB20	CMZ20
22	CRZ22	CMZB22	CMZ22
24	CRZ24	CMZB24	CMZ24
27	CRZ27	CMZB27	CMZ27
30	CRZ30	CMZB30	CMZ30
33	CRZ33	CMZB33	CMZ33
36	CRZ36	CMZB36	CMZ36
39	CRZ39	CMZB39	CMZ39
43	CRZ43	CMZB43	CMZ43
47	CRZ47	CMZB47	CMZ47
48			
51		CMZB51	CMZ51
53		CMZB53	CMZ53

Note: P: 1 W, bi-directional zener diode

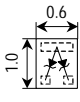
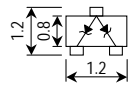
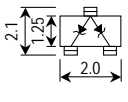
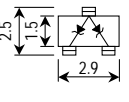
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ESD Protection Diodes (Standard Type) (Unidirectional)

Number of Diodes	Single Type				V _Z (V)	@I _Z (mA)	I _R max			C _T		
	Package	SC2  (mm)	CST2  (mm)	fSC  (mm)			USC  (mm)	SC2 Package	@V _R (V)	(pF)	SC2 Package	@V _R (V)
Part Number	—	—	—	—	2.0	5	120	—	1	63	—	0
	—	—	—	—	3.3		—	TBD	TBD	—	TBD	0
	DF2S3.6SC **	—	—	—	3.6		10	TBD	1	57	TBD	0
	DF2S5.1SC *	—	—	—	5.1		—	0.006	3.5	—	25	0
	DF2S5.6SC **	DF2S5.6CT	DF2S5.6FS	—	5.6		1	TBD	3.5	40	TBD	0
	DF2S6.2SC *	DF2S6.2CT	DF2S6.2FS	—	6.2		2.5	0.2n	5	32	16	0
	DF2S6.8SC *	DF2S6.8CT	DF2S6.8FS	—	6.8		0.5	0.6n	5	25	15	0
	DF2S8.2SC *	DF2S8.2CT	DF2S8.2FS	—	8.2		0.5	0.2	6.5	20	10	0
	—	—	DF2S10FS	—	10		0.5	—	8	16	—	0
	—	—	DF2S12FS	DF2S12FU	12		0.05	—	9	15	—	0
	—	DF2S16CT **	DF2S16FS	—	16		0.5	—	12	10	—	0
	—	DF2S18CT **	—	—	18		0.5	—	14	10	—	0
	—	DF2S20CT **	DF2S20FS	—	20		0.5	—	15	9.0	—	0
	—	DF2S24CT **	DF2S24FS	—	24		0.5	—	19	8.5	—	0
	—	DF2S30CT **	DF2S30FS	—	30		2	0.5	—	23	7.0	—

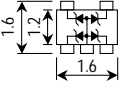
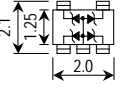
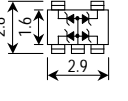
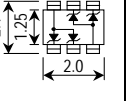
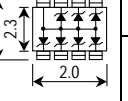
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*: New product
**: Under development

Number of Diodes	2 in 1				V _Z (V)	@I _Z (mA)	I _R (μA)		C _T (pF)	
	Package	CST3  (mm)	VESM  (mm)	USM  (mm)			S-MINI  (mm)	Max	@V _Z (V)	Typ.
Part Number	DF3A3.3CT	DF3A3.3FV	DF3A3.3FU	—	3.3	5	20	1.0	115	0
	DF3A3.6CT	DF3A3.6FV	DF3A3.6FU	—	3.6	5	10	1.0	110	0
	—	—	DF3A4.3FU	—	4.3	5	10	1.8	100	0
	DF3A5.6CT	DF3A5.6FV	DF3A5.6FU	DF3A5.6F	5.6	5	1	2.5	65	0
	DF3A6.2CT	DF3A6.2FV	DF3A6.2FU	DF3A6.2F	6.2	5	1	3.0	55	0
	DF3A6.8CT	DF3A6.8FV	DF3A6.8FU	DF3A6.8F	6.8	5	0.5	5.0	45	0
	DF3A8.2CT	DF3A8.2FV	DF3A8.2FU	—	8.2	5	0.5	6.5	38	0

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


The internal connection diagrams only show the general configurations of the circuits.

Number of Diodes	4 in 1					V _Z (V)	@I _Z (mA)	I _R (μA)		C _T (pF)	
	Package	ESV  (mm)	USV  (mm)	SMV  (mm)	US6  (mm)			US8  (mm)	Max	@V _Z (V)	Typ.
Part Number	DF5A3.3JE	DF5A3.3FU	DF5A3.3F	—	—	3.3	5	20	1.0	115	0
	DF5A3.6JE	DF5A3.6FU	DF5A3.6F	—	—	3.6	5	10	1.0	110	0
	DF5A5.6JE	DF5A5.6FU	DF5A5.6F	—	—	5.6	5	1	2.5	65	0
	DF5A6.2JE	DF5A6.2FU	DF5A6.2F	—	—	6.2	5	1	3.0	55	0
	DF5A6.8JE	DF5A6.8FU	DF5A6.8F	DF6A6.8FU	DF8A6.8FK	6.8	5	0.5	5.0	45	0
	DF5A8.2JE	DF5A8.2FU	DF5A8.2F	—	—	8.2	5	0.5	6.5	38	0
	—	DF5A12FU	—	—	—	12	5	0.05	9	26	0

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

(Bidirectional)

Number of Diodes	Single Type			V _{BR}		I _{R max}		C _T	
	CST2	fSC	ESC	(V)	@I _R (mA)	(μA)	@V _R (V)	(pF)	@V _R (V)
Package									
Part Number	DF2B6.8CT *	DF2B6.8FS *	DF2B6.8E*	6.8	1	0.5	5	15	0

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

*: New product

(High-Speed Type)

Number of Diodes	4 in 1		V _Z		C _T	
	ESV	USV	(V)	@I _Z	(pF)	@V _Z
Package Dimensions and Internal Connections			Typ.	(mA)	Typ.	(V)
Part Number	DF5A3.6CJE	DF5A3.6CFU	3.6	5	52	0
	DF5A5.6CJE	DF5A5.6CFU	5.6	5	29	0
	DF5A6.2CJE	DF5A6.2CFU	6.2	5	25	0
	DF5A6.8CJE	DF5A6.8CFU	6.8	5	23	0
	DF5A8.2CJE	DF5A8.2CFU	8.2	5	19	0

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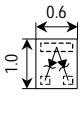
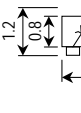
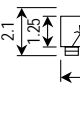
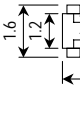
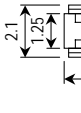
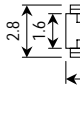
The internal connection diagrams only show the general configurations of the circuits.

Number of Diodes	5 in 1		V _Z		C _T	
	CST6F	US6	(V)	@I _Z	(pF)	@V _Z
Package Dimensions and Internal Connections			Typ.	(mA)	Typ.	(V)
Part Number	—	DF7A5.6CFU	5.6	5	34	0
	DF7A6.2CTF *	DF7A6.2CFU	6.2	5	28	0
	—	DF7A6.8CFU	6.8	5	26	0

• Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components. *: New product

The internal connection diagrams only show the general configurations of the circuits.

(Super High-Speed Type)

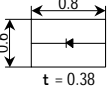
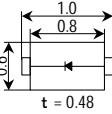
Number of Diodes	2 in 1			4 in 1			V _Z (V)		C _T (pF)		
	Package	CST3	VESM	USM	ESV	USV	SMV	Typ.	@I _Z (mA)	Typ.	@V _Z (V)
Package Dimensions and Internal Connections											
Part Number	—	DF3A5.6LFV *	DF3A5.6LFU	DF5A5.6LJE	DF5A5.6LFU	—	5.6	5	8.0	0	
	—	DF3A6.2LFV *	DF3A6.2LFU	DF5A6.2LJE	DF5A6.2LFU	—	6.2	5	6.5	0	
	DF3A6.8LCT *	DF3A6.8LFV *	DF3A6.8LFU	DF5A6.8LJE	DF5A6.8LFU	DF5A6.8LF	6.8	5	6	0	
	—	DF3A8.2LFV *	DF3A8.2LFU	—	DF5A8.2LFU	DF5A8.2LF	8.2	5	5	0	

• Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

*: New product

The internal connection diagrams only show the general configurations of the circuits.

(Ultra High-Speed Type)

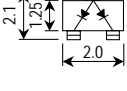
Number of Diodes	Single Type	Single Type	V _Z (V)		I _Z (μA)		C _T (pF)		
	Package	CST2	fSC		Min	Typ.	Max	@V _Z (V)	
Package Dimensions and Internal Connections									
Part Number	DF2S6.8UCT **	DF2S6.8UFS *	5.3	6.8	1	0.5	5.0	2.0	0

• Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

*: New product

**: Under development

The internal connection diagrams only show the general configurations of the circuits.



Number of Diodes	2 in 1	V _R (V)			I _R (μA)		C _T (pF)	
	Package	USM			Min	Typ.	Max	@V _R (V)
Package Dimensions and Internal Connections								
Part Number	DF3A6.8UFU *	5.3	6.8	1	0.5	5.0	2.5	0

• Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

*: New product

The internal connection diagrams only show the general configurations of the circuits.

(With EMI Filter)

Number of Diodes	2 in 1	4 in 1	V _Z (V)		I _Z (μA)		C _T (pF)		R _{I/O} (Ω)		
	Package	CST3	CST6F		Min	Typ.	Max	@V _Z (V)	Typ.	@I _T (mA)	
Package Dimensions and Internal Connections											
Part Number	DF3S6.8ECT **	DF6D6.8ECTF **	5.3	6.8	1	40	0	40	0	100	20

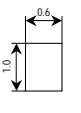
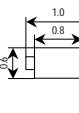
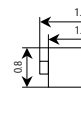
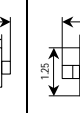
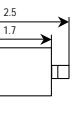
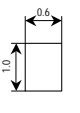
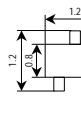
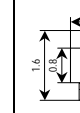
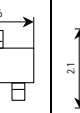































• Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

**: Under development

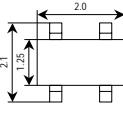
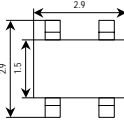
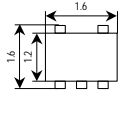
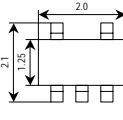
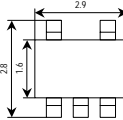
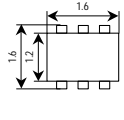
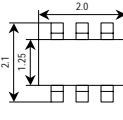
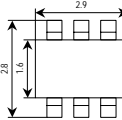






















The internal connection diagrams only show the general configurations of the circuits.

Switching Diodes

Small-Signal Switching Diodes and Multiple Switching Diodes

V _R (V)	I _O (mA)	t _{rr} (ns)	CST2	FSC	ESC	USC	CST3	VESM	SSM	USM (SC-70)	S-MINI (SC-59)			
			 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)			
30	100	—									1SS307 			
80	100	—								1SS412 	1SS379 			
80	100	1.6 Typ.							1SS360 	1SS300 	1SS181 			
80	100	1.6 Typ.					1SS361CT 	1SS361FV 	1SS361 	1SS301 	1SS184 			
80	100 (80)	1.6 Typ.						1SS362FV 	(1SS362) 	1SS302 	1SS226 			
80	100 (80)	1.6 Typ.	1SS387CT 		1SS387 	1SS352 						1SS193 		
				1SS427 									1SS196 	
														1SS187 
														1SS190 
80	100	1.6 Typ.												
80	200	7.0 Typ.									1SS336 			
80	200	6.0 Typ.									1SS337 			
200	100	10 (30) Typ.				1SS403 				1SS370 	1SS250 			
400	100	500 (1500) Typ.								1SS397 	(1SS311) 			
400	100	500 Typ.									1SS398 			

- The I_O ratings enclosed in parenthesis are for those devices whose part numbers are enclosed in parentheses.
- The products shown in bold are also manufactured in offshore fabs.
- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

USQ	SMQ (SC-61)	ESV	USV	SMV (SC-74A)	ES6	US6	SM6 (SC-74)	Remarks
 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	
								Low leakage current, Single
								Low leakage current, Series-connected
			HN4D01JU	1SS308	HN1D01FE	HN1D01FU	HN1D01F	High-speed switching, Common anode
								High-speed switching, Common cathode
			HN4D02JU	1SS309	HN1D02FE	HN1D02FU	HN1D02F	High-speed switching, Common cathode
								High-speed switching, Series-connected
						HN1D04FU		High-speed switching, Series-connected
								High-speed switching, Independent diodes
1SS382	1SS272	HN2D01JE				(HN2D01FU)	(HN2D01F)	High-speed switching, Independent diodes
								High-speed switching, Independent diodes
						(HN2D02FU)		High-speed switching, Independent diodes
								High-speed switching, Independent diodes
								High-speed switching, Independent diodes
								High-speed switching, Independent diodes
						HN1D03FU	HN1D03F	High-speed switching, Common cathode + Common anode
								High current, Common anode
								High current, Common anode
								High current, Common anode
	(1SS306)							High breakdown voltage, Independent diodes
								High breakdown voltage, Independent diodes
	1SS399						HN2D03F	High breakdown voltage, Independent diodes
								High breakdown voltage, Series-connected
								High breakdown voltage, Series-connected

The internal connection diagrams only show the general configurations of the circuits.

Schottky Barrier Diodes

Schottky Barrier Diodes (SBDs)

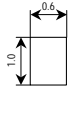
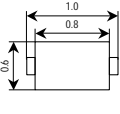
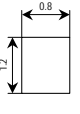
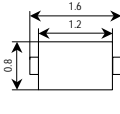
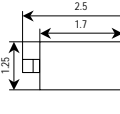
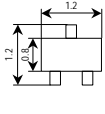
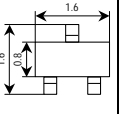
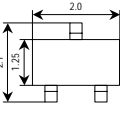













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			20	30	40	60	120
Average Forward Currents (A)	0.7	US-FLAT			CUS03	CUS04	
	1	US-FLAT	CUS05 CUS06	CUS01 CUS02 CUS10I30A *			
		S-FLAT	CRS06	CRS01 CRS02 CRS03 CRS05 CRS11 CRS10I30A * CRS10I30B *	CRS04	CRS12 CRS13	
		M-FLAT		CMS08 CMS09	CMS10		
		VS-8		TPCF8E02 (Note 1)			
	1.5	US-FLAT		CUS15I30A *			
		S-FLAT		CRS08 CRS09 CRS15I30A *			
	2	S-FLAT		CRS14 CRS20I30A *			
		M-FLAT		CMS06 CMS07 CMS17	CMS11	CMS14	
	3	S-FLAT		CRS15			
		M-FLAT		CMS01 CMS02 CMS03 CMS18	CMS16 CMS19	CMS15 CMS20	
	5	M-FLAT		CMS04 CMS05			
	10	L-FLAT		CLS01	CLS02	CLS03	

Note 1: Two separate diodes

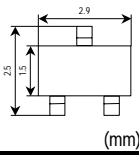
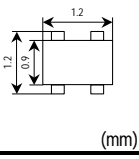
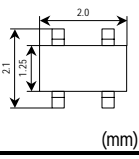
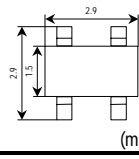
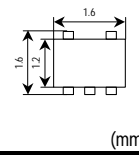
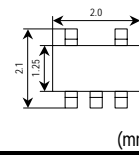










*: New product

- The products shown in bold are also manufactured in offshore fabs.
- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Small-Signal Schottky Barrier Diodes and Multiple Schottky Barrier Diodes

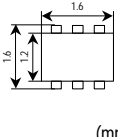
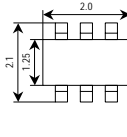
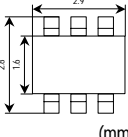





Absolute Maximum Ratings		Electrical Characteristics (Ta = 25°C)			CST2	fSC	CST2B	ESC	USC	VESM	SSM	USM (SC-70)
Vr (V)	Io (mA)	Vf (V)		@If (mA)								
		Typ.	Max		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
10	50	0.63	1.0	50								
10	100	0.23	0.3	5				1SS389	1SS367			1SS395
		0.35	0.5	100								
10	100	0.23	0.3	5						1SS385FV	1SS385	1SS378
		0.35	0.5	100								
10	100	0.23	0.3	5								1SS372
		0.35	0.5	100								
20	50	0.33	—	1		1SS413		1SS405	1SS406			
		0.5	0.55	50								
20	200	0.42	0.5	200				1SS424				
												
20	300	0.16	—	1					1SS404			1SS401
		0.38	0.45	300								
20	500	0.50	0.55	500								
20	1000	0.46	0.55	1000								

- The products shown in bold are also manufactured in offshore fabs.
- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

S-MINI (SC-59)	TESQ	USQ	SMQ (SC-61)	ESV	USV	Remarks
 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	
1SS321						Low leakage current, Common cathode
						
1SS394		1SS384	1SS391			Low Vf, Independent diodes
						
1SS377						Low Vf, Common cathode
						
1SS374						Low Vf, Series-connected
						
	HN2S03T	1SS402				Low leakage current, High-speed SW
						
						Low Ir
						Low Vf, High current
1SS344						High current, Single
						
1SS349						High current, Single
						

The internal connection diagrams only show the general configurations of the circuits.

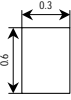
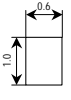
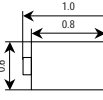
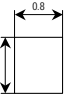
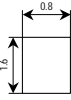
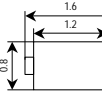
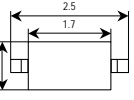


















Small-Signal Schottky Barrier Diodes and Multiple Schottky Barrier Diodes (Continued)

Absolute Maximum Ratings		Electrical Characteristics (Ta = 25°C)			ES6	US6	SM6 (SC-74)	Remarks
Vr (V)	Io (mA)	Vf (V)		@If (mA)				
		Typ.	Max			(mm)	(mm)	(mm)
10	50	0.63	1.0	50				Low leakage current, Common cathode
10	100	0.23	0.3	5		HN2S01FU	HN2S05FU	Low Vf Independent diodes
		0.35	0.5	100				
10	100	0.23	0.3	5				Low Vf Common cathode
		0.35	0.5	100				
10	100	0.23	0.3	5				Low Vf, Series-connected
		0.35	0.5	100				
20	50	0.33	—	1	HN2S03FE	HN2S03FU		Low leakage current, High-speed SW
		0.5	0.55	50				
20	200	0.42	0.5	200				Low Ir
20	300	0.16	—	1		HN2S04FU *		Low Vf High current
		0.38	0.45	300				
20	500	0.50	0.55	500				High current, Single
20	1000	0.46	0.55	1000				High current, Single

• The products shown in bold are also manufactured in offshore fabs.
 • Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

*: New product
 The internal connection diagrams only show the general configurations of the circuits.

Small-Signal Schottky Barrier Diodes and Multiple Schottky Barrier Diodes (Continued)

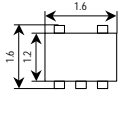
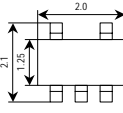
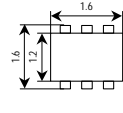
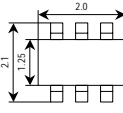
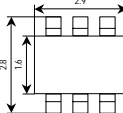


Absolute Maximum Ratings		Electrical Characteristics (Ta = 25°C)			SC2	CST2	fSC	CST2B	CST2C	ESC	USC
VR (V)	Io (mA)	VF (V)		@IF (mA)							
		Typ.	Max.		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
30	100	0.38	0.5	100		1SS416CT 	1SS416 				
30	100	0.41	0.5	100	DSF01S30SC * 						
30	100	0.51	0.62	100	DSR01S30SC * 						
30	200	0.52	0.6	200		1SS420CT/DSR520CT * 				1SS420/DSR520 * 	
30	200	0.44	0.5	200		DSF521CT * 				1SS421/DSF521 * 	
30	500	0.40	0.45	500				DSF05S30CTB * 			DSF05S30U * 
30	500	0.50	0.55	500				DSR05S30CTB * 			DSR05S30U * 
30	700	0.40	0.45	700							DSF07S30U * 
30	700	0.50	0.55	700							DSR07S30U * 
40	100	0.54 (0.56)	0.6 (0.62)	100		(1SS417CT) 	(1SS417) 			1SS388 	1SS357 
40	100	0.54	0.6	100							
40	100	0.54 (0.56)	0.6 (0.62)	100							
80	100	0.56	0.7	100							

- The Io ratings enclosed in parenthesis are for those devices whose part numbers are enclosed in parentheses.
- The products shown in bold are also manufactured in offshore fabs.
- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

VESM	SSM	USM (SC-70)	S-MINI (SC-59)	TESQ	USQ	SMQ (SC-61)	Remarks
 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	 (mm)	
	1SS422 						Low Vf
							Low Vf
							Low Ir
							Low Ir
							Low Vf
							Low Vf
							Low Ir
							High current, Single Improved Vf and Ir
							High current, Single Improved Vf and Ir
		1SS322 	1SS294 		1SS383 	1SS319 	Standard, Independent diodes
		1SS393 	1SS392 				Standard, Common cathode
	(1SS423) 		1SS396 				Standard, Series-connected
			1SS348 				High current, Single

*: New product

The internal connection diagrams only show the general configurations of the circuits.

Absolute Maximum Ratings		Electrical Characteristics (Ta = 25°C)			ESV	USV	ES6	US6	SM6 (SC-74)	Remarks
V _R (V)	I _o (mA)	V _F (V)		@I _F (mA)						
		Typ.	Max		(mm)	(mm)	(mm)	(mm)	(mm)	
30	100	0.38	0.5	100						Low V _F
30	100	0.37	—	100						Low V _F
30	100	0.46	—	100						Low I _R
30	200	0.52	0.6	200						Low I _R
30	200	0.44	0.5	200						Low V _F
30	500	0.40	0.45	500						Low V _F
30	500	0.50	0.55	500						Low I _R
30	700	0.40	0.45	700						High current, Single Improved V _F and I _R
30	700	0.50	0.55	700						High current, Single Improved V _F and I _R
40	100	0.54 (0.56)	0.6 (0.62)	100	HN2S02JE 			HN2S02FU 		Standard, Independent diodes
40	100	0.54	0.6	100						Standard, Common cathode
40	100	0.54 (0.56)	0.6 (0.62)	100						Standard, Series-connected
80	100	0.56	0.7	100						High current, Single

- The I_o ratings enclosed in parenthesis are for those devices whose part numbers are enclosed in parentheses.
- The products shown in bold are also manufactured in offshore fabs.
- Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

The internal connection diagrams only show the general configurations of the circuits.

Radio-Frequency Schottky Barrier Diodes

Part Number	Applications	V _R *V _{RM} (V)	I _F (mA)	V _F (Typ.)		C _T (Typ.)		Package
				(V)	I _F (mA)	(pF)	V _R (V)	
1SS154	VHF to S-band mixers	6	30	0.5	10	0.8	0	S-MINI (Single)
1SS271		6	30	0.5	10	0.8	0	S-MINI (Twin)
1SS295		4	30	0.25	2	0.6	0.2	S-MINI (Twin)
1SS315	UHF MIX	*5	30	0.25	2	0.6	0.2	USC
JDH2S01FS		4	25	0.25	2	0.6	0.2	fSC
JDH3D01S		4	25	0.25	2	0.6	0.2	SSM (Twin)
JDH3D01FV		4	25	0.25	2	0.6	0.2	VESM (Twin)
JDH2S02FS		10	10	0.24	1	0.3	0.2	fSC
JDH2S02SC		10	10	0.24	1	0.3	0.2	SC2
JDH2S04FS *		10	10	0.18	1	0.4	0.2	fSC

• Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

*: New product

Photodiodes

Part Number	Package	Electrical/Optical Characteristics (Ta = 25°C)							Applications
		Short-Circuit Current		Dark Current		Peak Sensitive Wavelength (nm)	Half-Value Angle (°)	Impermeable to Visible Light	
		Min (μA)	E (mW/cm ²)	Max (nA)	V _R (V)				
TPS703(F)	Side-view package	0.9	0.1	30	10	960	±65	●	Remote controls
TPS704(F)		0.5	0.1	30	10	1000	±65	●	

Note: E = radiant incidence; V_R = reverse voltage

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