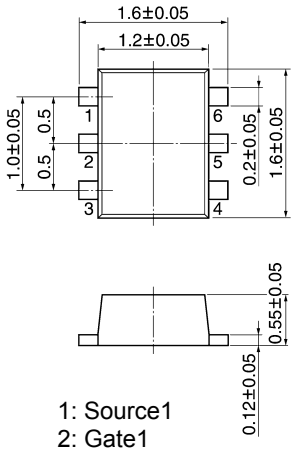
Field Effect Transistor Silicon N Channel MOS Type

High Speed Switching Applications
Analog Switching Applications

- Small package
- Low ON resistance : R_{on} = 4.0 Ω (max) (@V_{GS} = 4 V)
  : R_{on} = 7.0 Ω (max) (@V_{GS} = 2.5 V)

Unit: mm



1: Source1
2: Gate1
3: Drain2
4: Source2
5: Gate2
6: Drain1

SOT563F

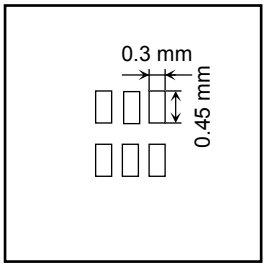
Weight: 3mg (typ.)

Absolute Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

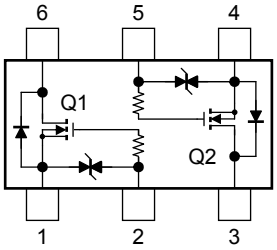
Characteristics		Symbol	Rating	Unit
Drain-Source voltage		V_{DS}	30	V
Gate-Source voltage		V_{GSS}	±20	V
Drain current	DC	I_D	100	mA
	Pulse	I_{DP}	200	
Drain power dissipation (Ta = 25°C)		P_D (Note 1)	150	mW
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	−55~150	°C

rate, etc).

Note 1: Total rating, mounted on FR4 board
(25.4 mm × 25.4 mm × 1.6 t, Cu Pad: 0.135 mm^2 × 6)



Equivalent Circuit (top view)

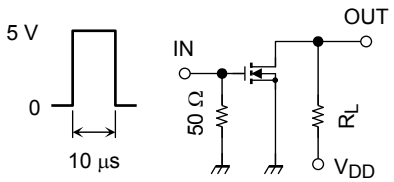


Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	V_{GS} = ±16 V, V_{DS} = 0	—	—	±1	μA
Drain-Source breakdown voltage		$V_{(BR)\ DSS}$	I_D = 0.1 mA, V_{GS} = 0	30	—	—	V
Drain cut-off current		I_{DSS}	V_{DS} = 30 V, V_{GS} = 0	—	—	1	μA
Gate threshold voltage		V_{th}	V_{DS} = 3 V, I_D = 0.1 mA	0.8	—	1.5	V
Forward transfer admittance		$\|Y_{fs}\|$	V_{DS} = 3 V, I_D = 10 mA	25	—	—	mS
Drain-Source ON resistance		$R_{DS\ (ON)}$	I_D = 10 mA, V_{GS} = 4 V	—	2.2	4.0	Ω
			I_D = 10 mA, V_{GS} = 2.5 V	—	4.0	7.0	
Input capacitance		C_{iss}	V_{DS} = 3 V, V_{GS} = 0, f = 1 MHz	—	7.8	—	pF
Reverse transfer capacitance		C_{rss}		—	3.6	—	pF
Output capacitance		C_{oss}		—	8.8	—	pF
Switching time	Turn-on time	t_{on}	V_{DD} = 5 V, I_D = 10 mA,	—	50	—	ns
	Turn-off time	t_{off}	V_{GS} = 0~5 V	—	180	—	

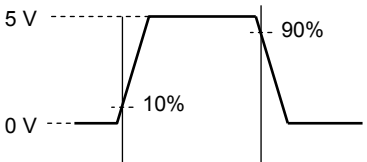
Switching Time Test Circuit

(a) Test circuit

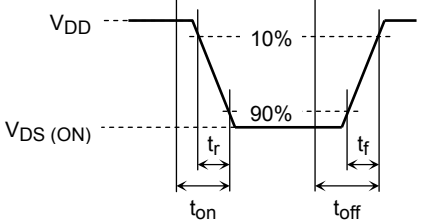


V_{DD} = 5 V
Duty ≦ 1%
V_{IN}: t_r, t_f < 5 ns
(Z_{out} = 50 Ω)
Common Source
Ta = 25°C

(b) V_{IN}

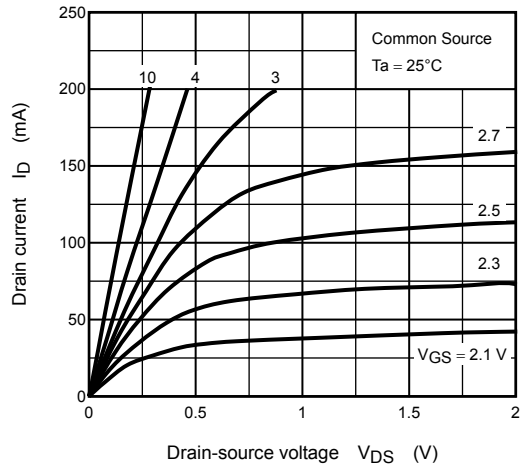


(c) V_{OUT}

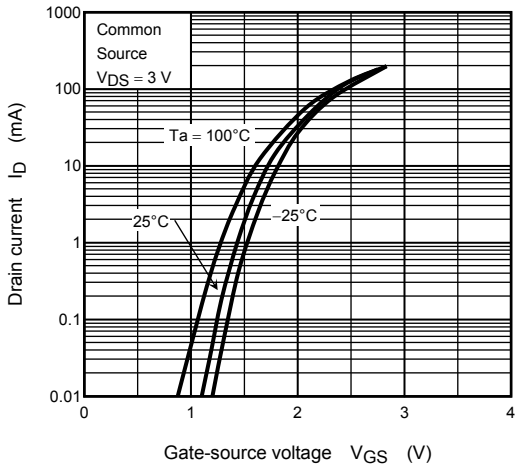


(Q1, Q2 Common)

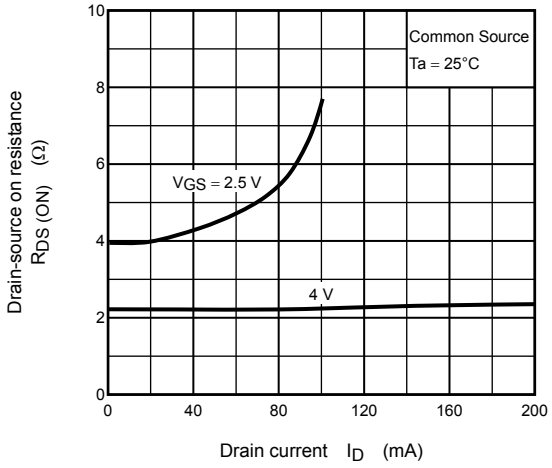
$I_D - V_{DS}$



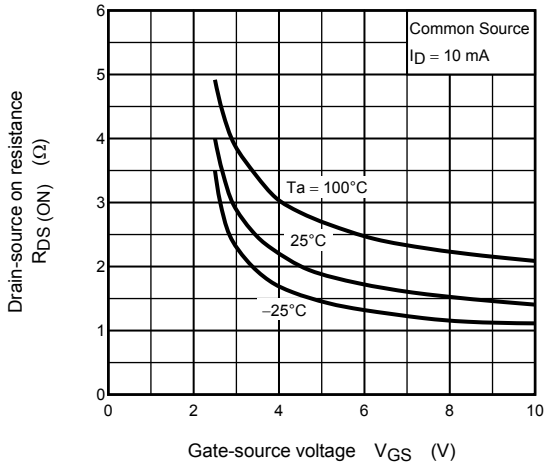
$I_D - V_{GS}$



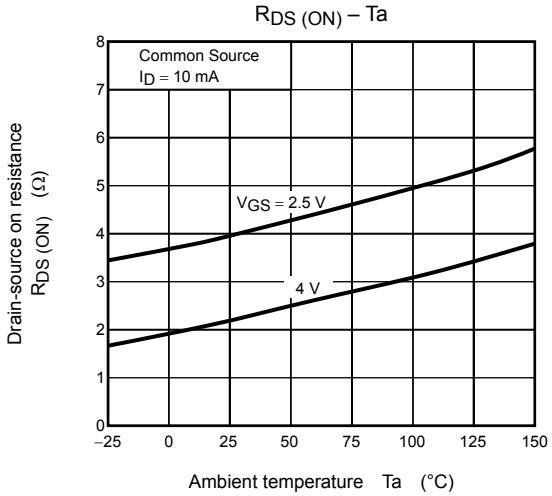
$R_{DS\ (ON)} - I_D$



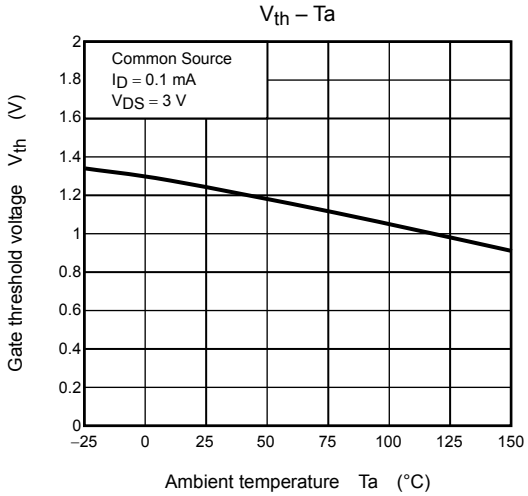
$R_{DS\ (ON)} - V_{GS}$



$R_{DS\ (ON)} - Ta$

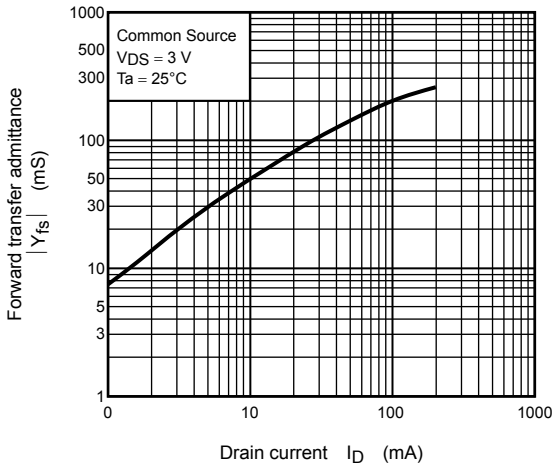


$V_{th} - Ta$

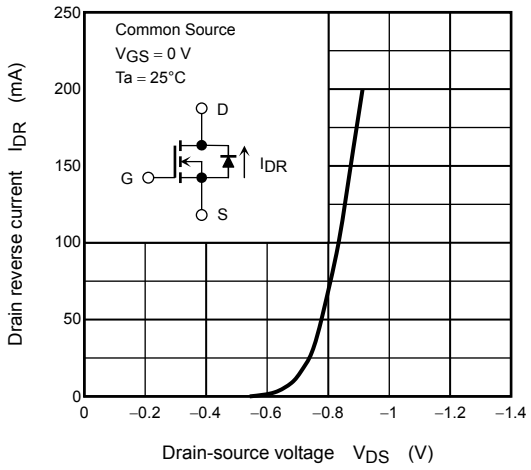


(Q1, Q2 Common)

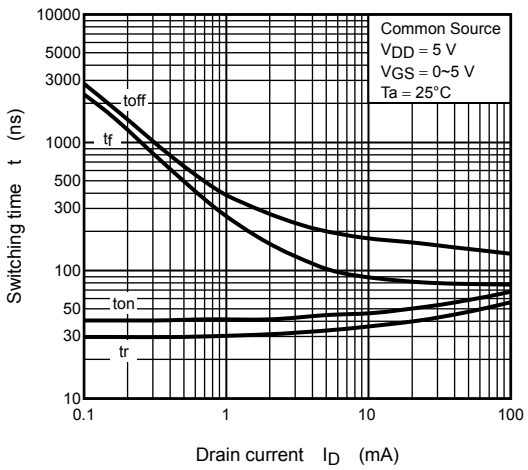
$|Y_{fs}| - I_D$



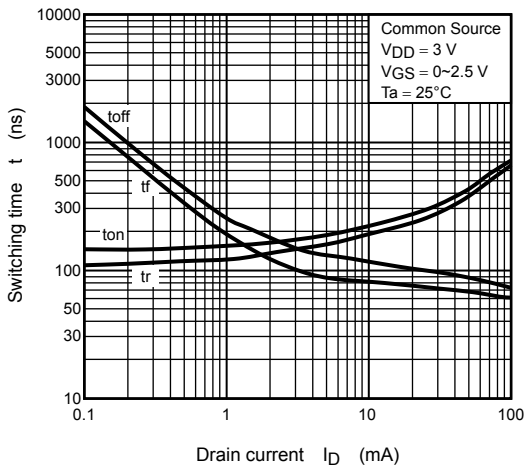
$I_{DR} - V_{DS}$



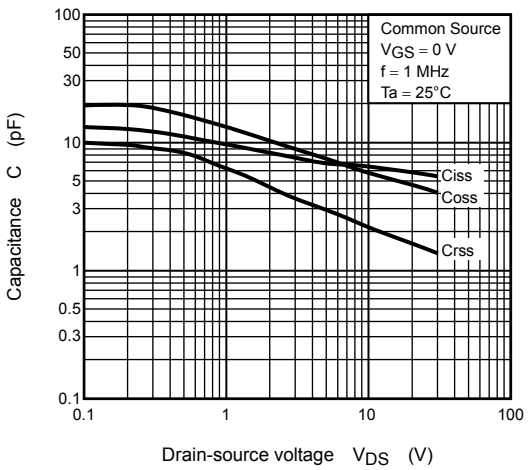
$t - I_D$



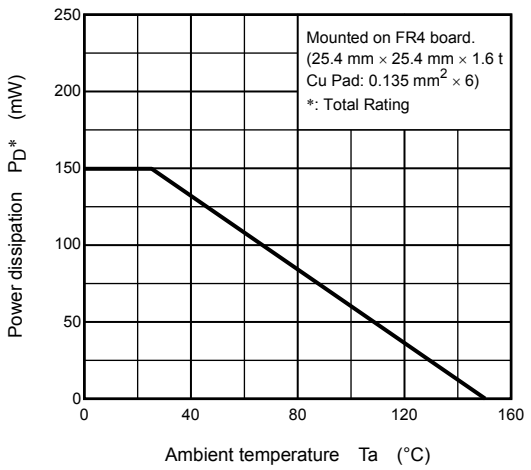
$t - I_D$



$C - V_{DS}$



$P_D^* - Ta$



*: Total rating