

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

SSM3K03FE

High Speed Switching Applications

Analog Switch Applications

- 2.5 V gate drive
- High input impedance
- Low gate threshold voltage: $V_{th} = 0.7 \sim 1.3$ V
- Small package

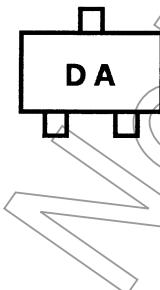
Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V _{DS}	20	V
Gate-source voltage	V _{GSS}	10	V
DC drain current	I _D	100	mA
Drain power dissipation	P _D	100	mW
Channel temperature	T _{ch}	150	°C
Storage temperature range	T _{stg}	-55~150	°C

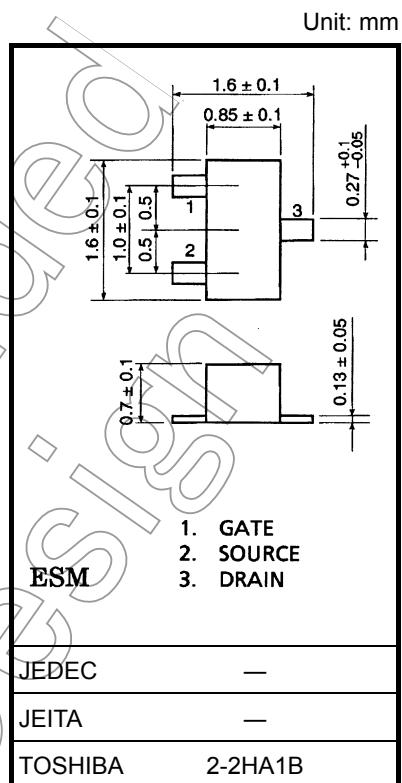
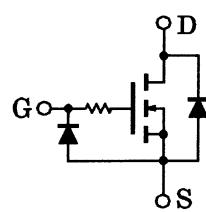
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Marking



Equivalent Circuit



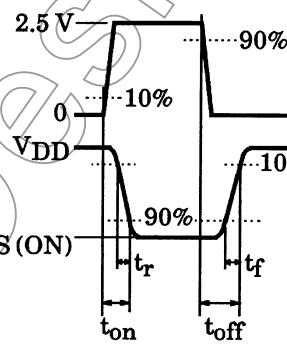
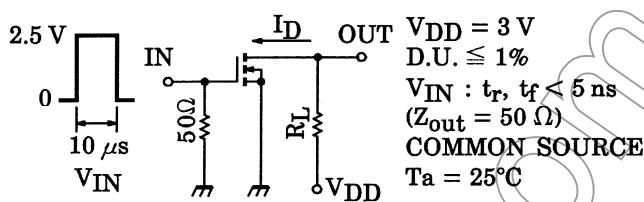
Weight: 2.3 mg (typ.)

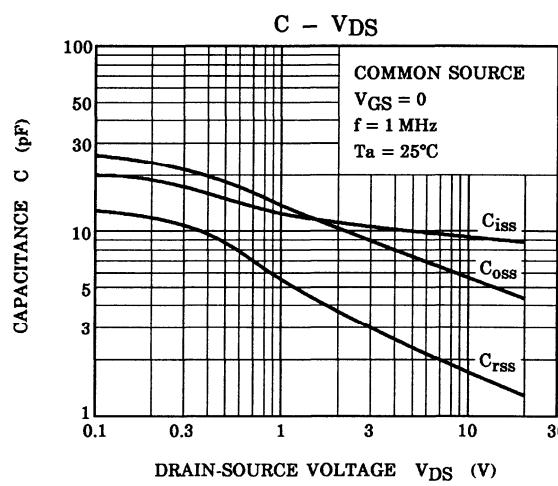
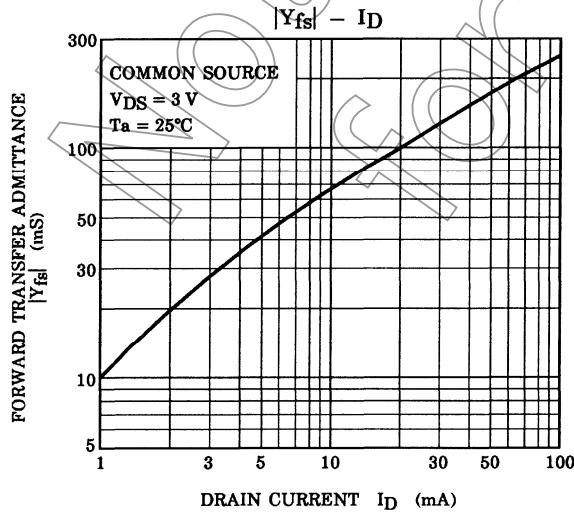
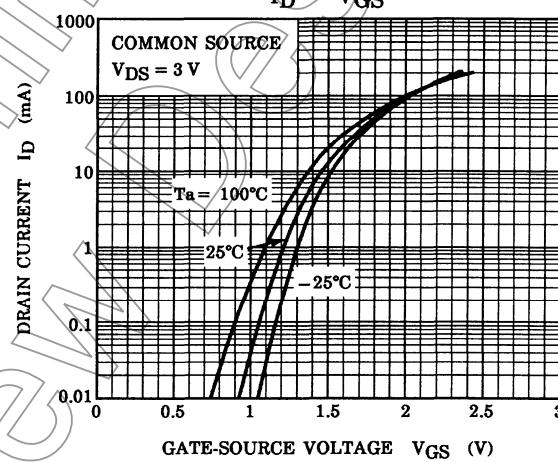
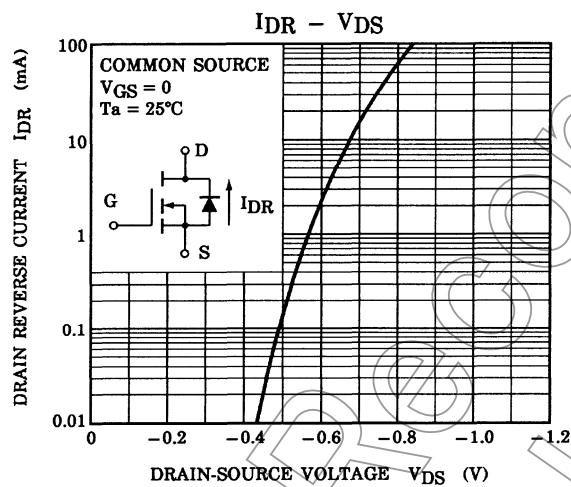
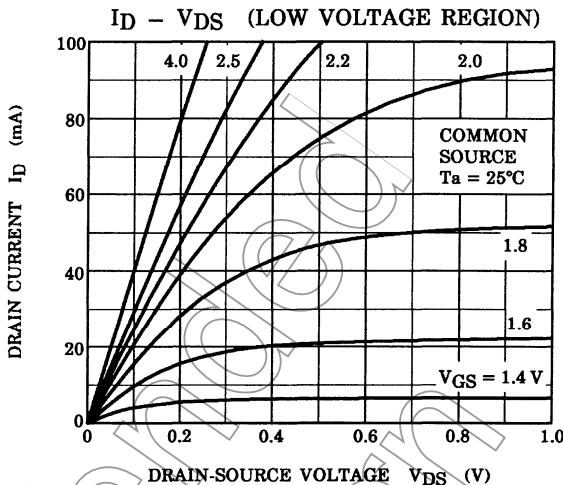
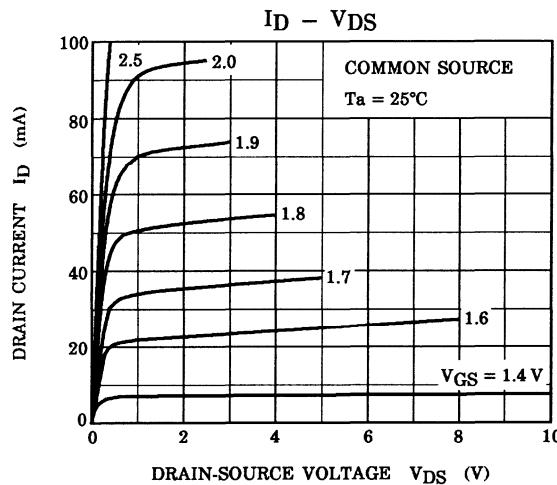
Electrical Characteristics (Ta = 25°C)

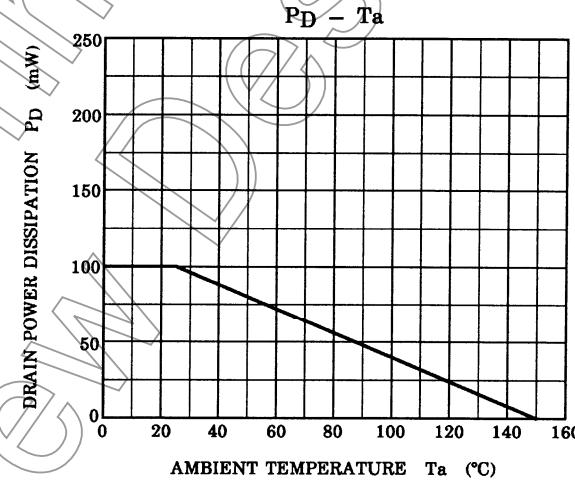
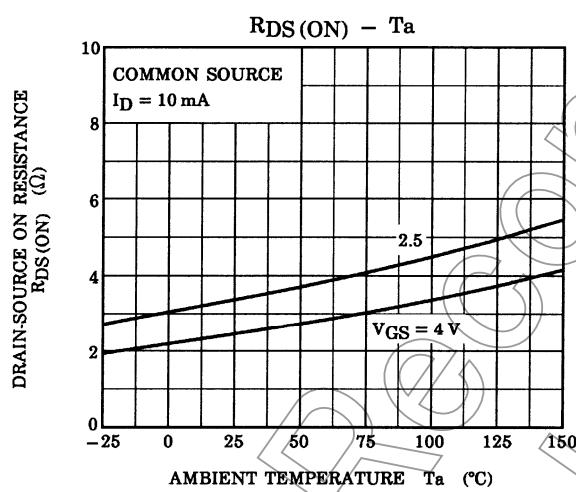
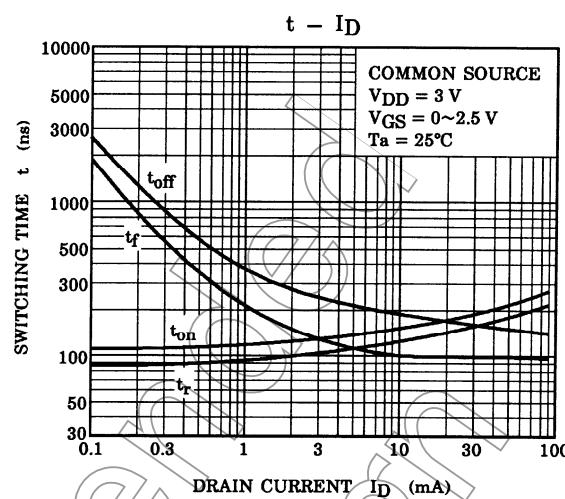
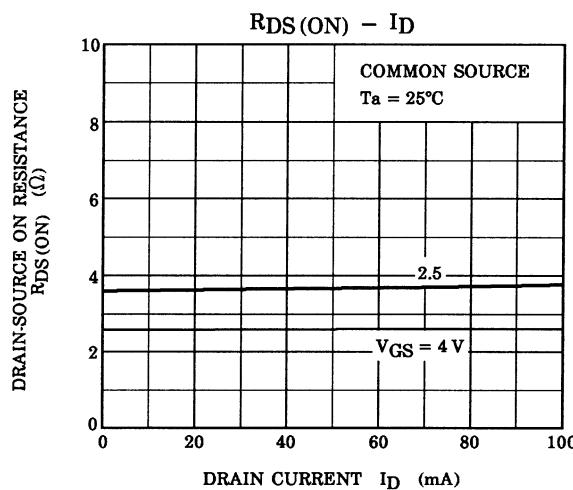
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	$V_{GS} = 10 \text{ V}, V_{DS} = 0$	—	—	1	μA
Drain-source breakdown voltage	$V_{(\text{BR})\text{DSS}}$	$I_D = 100 \mu\text{A}, V_{GS} = 0$	20	—	—	V
Drain cut-off current	I_{DSS}	$V_{DS} = 20 \text{ V}, V_{GS} = 0$	—	—	1	μA
Gate threshold voltage	V_{th}	$V_{DS} = 3 \text{ V}, I_D = 0.1 \text{ mA}$	0.7	—	1.3	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 3 \text{ V}, I_D = 10 \text{ mA}$	25	50	—	mS
Drain-source ON resistance	$R_{DS\text{ (ON)}}$	$I_D = 10 \text{ mA}, V_{GS} = 2.5 \text{ V}$	—	4	12	Ω
Input capacitance	C_{iss}	$V_{DS} = 3 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	11.0	—	pF
Reverse transfer capacitance	C_{rss}	$V_{DS} = 3 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	3.3	—	pF
Output capacitance	C_{oss}	$V_{DS} = 3 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	9.3	—	pF
Switching time	Turn-on time	t_{on}	$V_{DD} = 3 \text{ V}, I_D = 10 \text{ mA}, V_{GS} = 0\text{--}2.5 \text{ V}$	—	0.16	—
	Turn-off time	t_{off}	$V_{DD} = 3 \text{ V}, I_D = 10 \text{ mA}, V_{GS} = 0\text{--}2.5 \text{ V}$	—	0.19	—
						μs

Switching Time Test Circuit

(a) Test circuit







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