

TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

2SK4059TK

For ECM

- Application for compact ECM

Absolute Maximum Ratings (Ta=25°C)

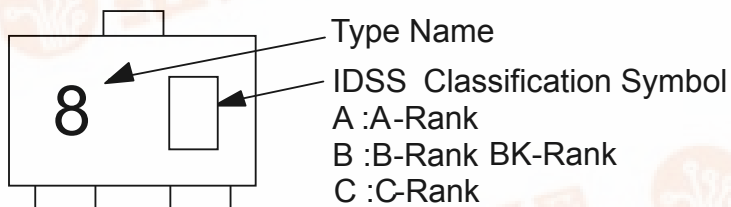
Characteristic	Symbol	Rating	Unit
Gate-Drain voltage	V_{GDO}	-20	V
Gate Current	I_G	10	mA
Drain power dissipation (Ta = 25°C)	P_D	100	mW
Junction Temperature	T_j	125	°C
Storage temperature range	T_{stg}	-55~125	°C

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).

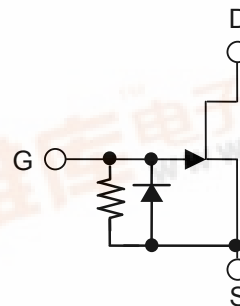
IDSS CLASSIFICATION

A-Rank	140~240 μ A
B-Rank	210~350 μ A
BK-Rank	210~400 μ A
C-Rank	320~500 μ A

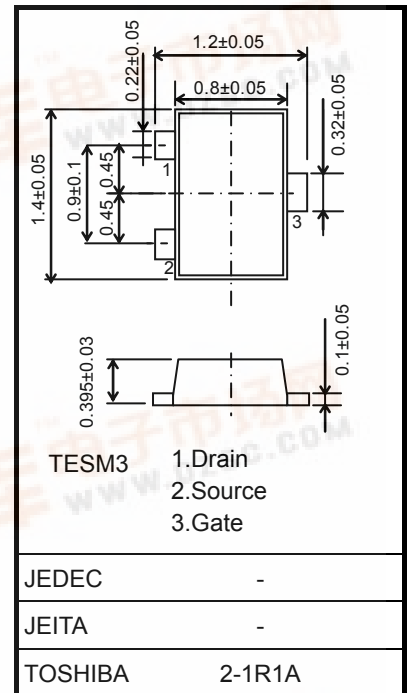
Marking



Equivalent Circuit



Unit: mm



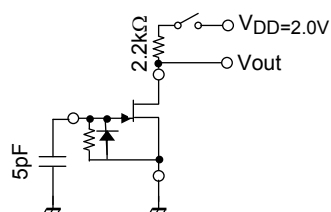
Weight: 2.2mg (typ.)

Electrical Characteristics (Ta=25°C)

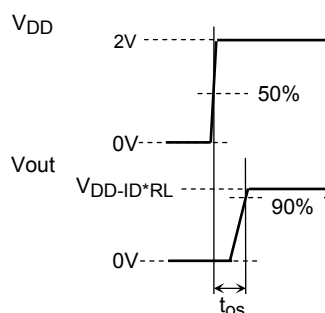
Characteristic	Symbol	Test Condition		Min	Typ.	Max	Unit
Drain Current	I _{DSS}	V _{DS} = 2 V, V _{GS} = 0	A	140	—	240	μA
			B	210	—	350	
			BK	210	—	400	
			C	320	—	500	
Drain Current	I _D	V _{DD} = 2 V, R _L = 2.2kΩ,C _g = 5pF	A	125	—	260	μA
			B	190	—	370	
			BK	190	—	420	
			C	290	—	500	
Gate-Source Cut-off Voltage	V _{GS(OFF)}	V _{DS} = 2 V, I _D = 1μA		-0.1	—	-1.0	V
Forward transfer admittance	Y _{fs}	V _{DS} = 2 V,V _{GS} = 0V		1.35	1.85	—	mS
Gate-Drain Voltage	V _{(BR)GDO}	I _G =-10μA		-20	—	—	V
Input capacitance	C _{iss}	V _{DS} = 2 V, V _{GS} = 0, f = 1 MHz		—	4.0	—	pF
Voltage Gain	G _v	V _{DD} = 2V, R _L = 2.2kΩ,C _g = 5pF, f = 1kHz,vin=100mV	A	-1.2	+0.9	—	dB
			B	-0.2	+1.4	—	
			BK	-0.2	+1.7	—	
			C	+0.5	+1.8	—	
Delta Voltage Gain	DG _{v(f)}	V _{DD} = 2V, R _L = 2.2kΩ,C _g = 5pF,f = 1kHz~100Hz,vin=100mV		—	0	-1	dB
Delta Voltage Gain	DG _{v(V)}	V _{DD} = 2V~1.5V, R _L = 2.2kΩ,C _g = 5pF,f = 1kHz, vin=100mV	A	—	-0.6	-1.1	dB
			B	—	-0.8	-1.7	
			BK	—	-1.1	-2.0	
			C	—	-1.4	-3.2	
Noise Voltage	V _N	V _{DD} = 2V, R _L = 1kΩ,C _g = 10pF,G _v =80dB, A-Curve Filter	A	—	33	75	mV
			B	—	38	80	
			BK	—	40	85	
			C	—	42	90	
Total Harmonic Distortion	THD	V _{DD} = 2V, R _L = 2.2kΩ,C _g = 5pF, f = 1kHz, vin=50mV	A	—	1.3	—	%
			B	—	0.6	—	
			BK	—	0.5	—	
			C	—	0.1	—	
Time Output Stability	tos	V _{DD} = 2V, R _L = 2.2kΩ,C _g = 5pF		—	100	200	ms

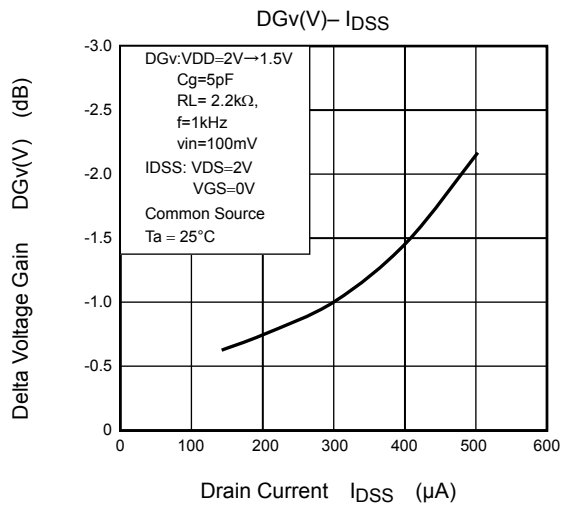
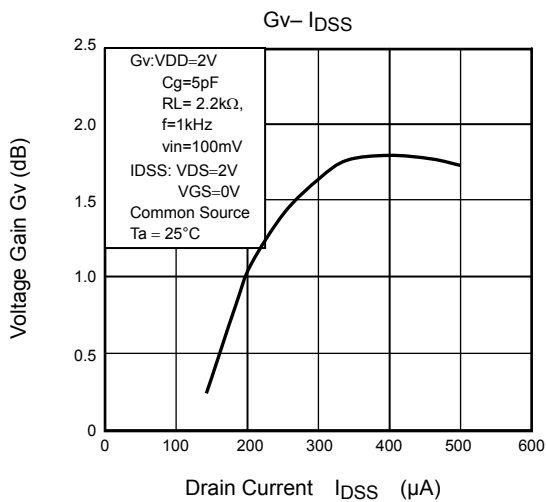
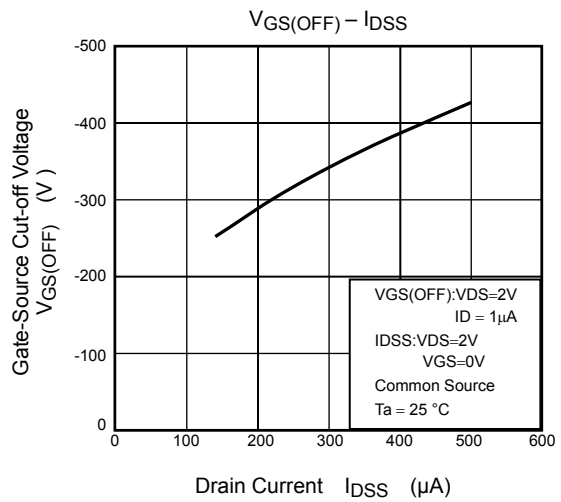
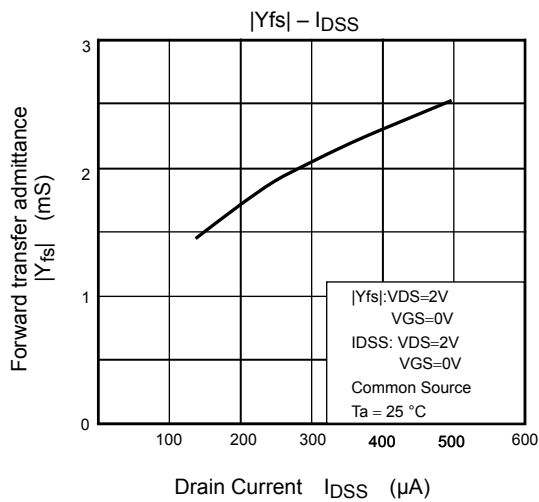
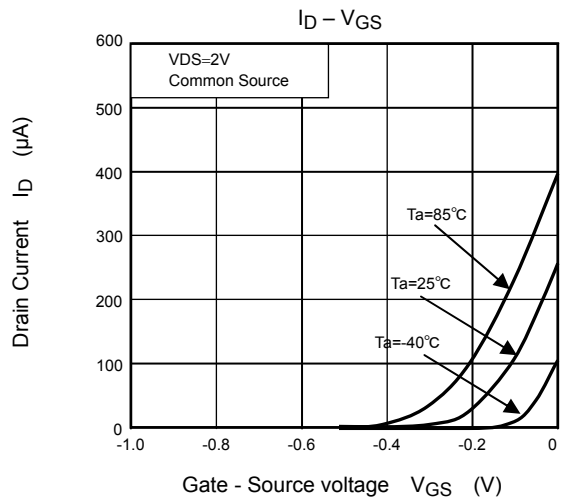
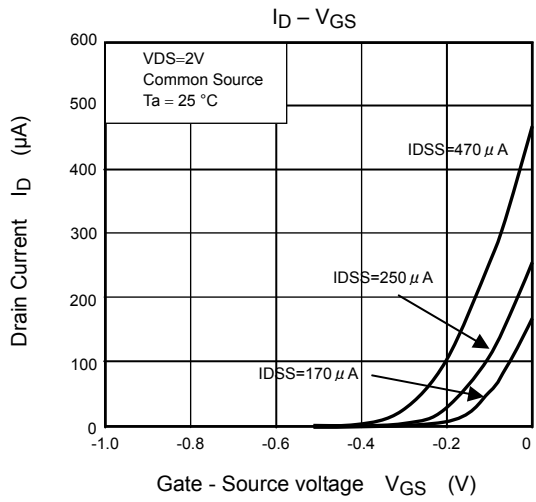
Time Output Stability Test Method

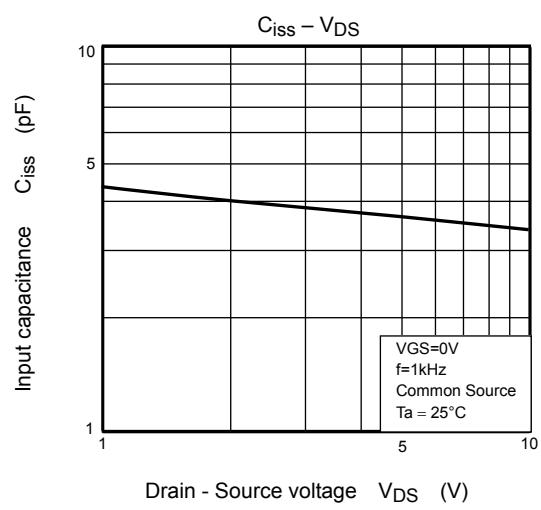
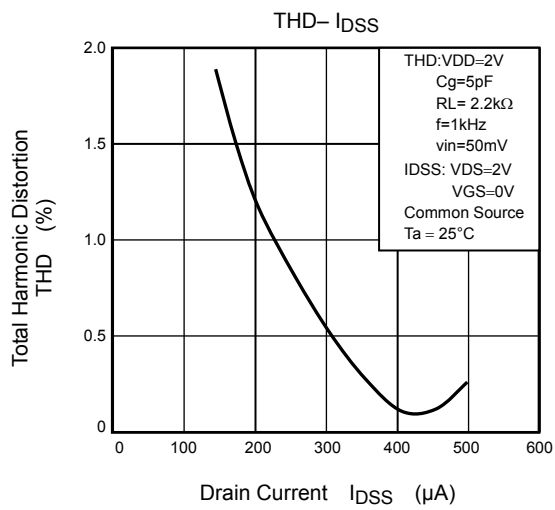
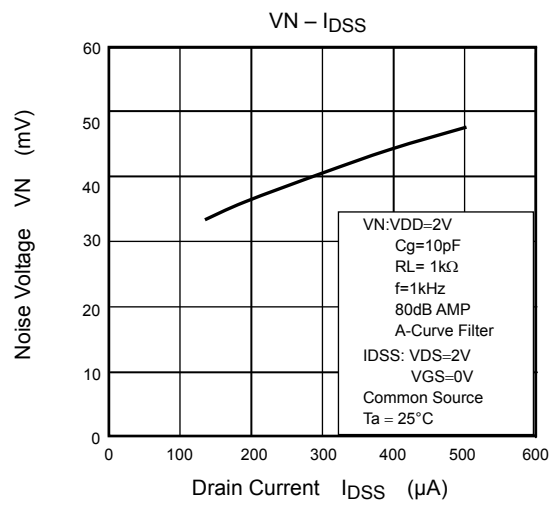
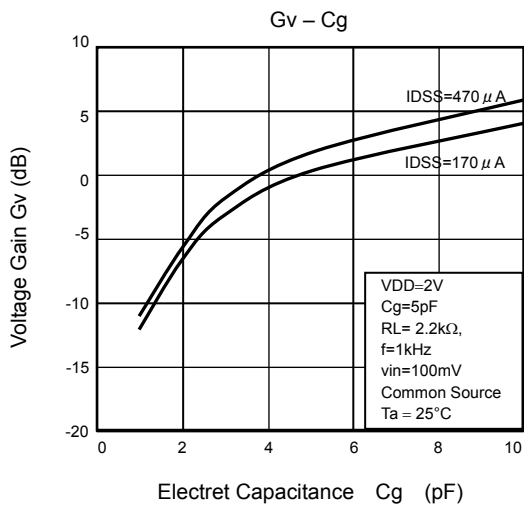
a) TEST CIRCUIT



b) TEST SIGNAL







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20070701-EN GENERAL

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