

SK8603140L

Silicon N-channel MOS FET

For Load-switching / For DC-DC Converter

■ Features

- Low Drain-source On-state Resistance : $R_{DS(on)}$ typ = 1.8 m Ω (VGS = 4.5 V)
- Halogen-free / RoHS compliant
 (EU RoHS / UL-94 V-0 / MSL : Level 1 compliant)

■ Marking Symbol : 14

■ Packaging

Embossed type (Thermo-compression sealing) : 3 000 pcs / reel (standard)

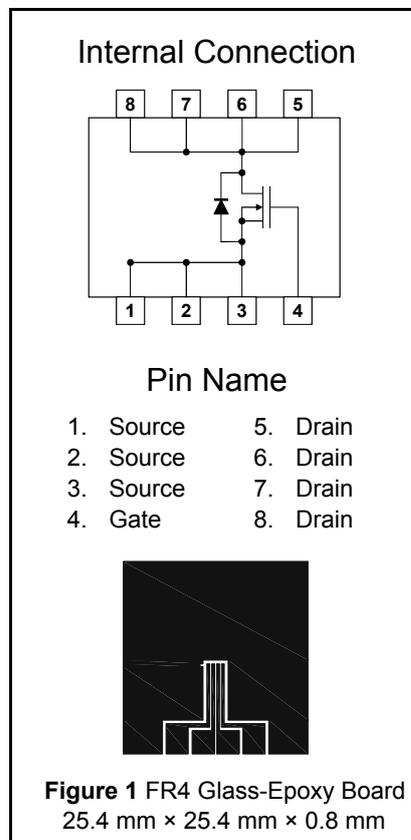
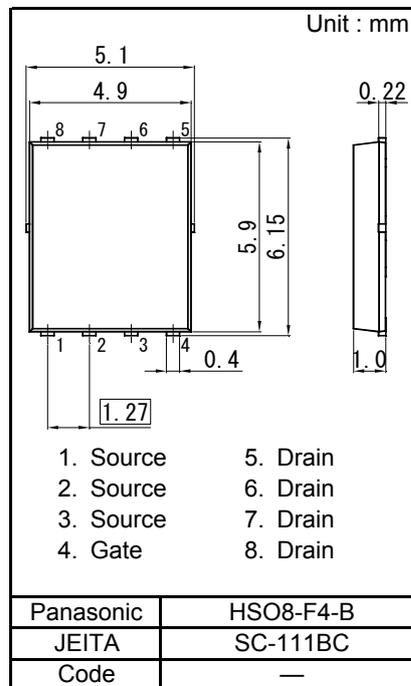
■ Absolute Maximum Ratings Ta = 25 °C

Parameter	Symbol	Rating	Unit	
Drain to Source Voltage	VDS	30	V	
Gate to Source Voltage	VGS	±20		
Drain Current	ID	Ta = 25 °C, t = 10 s ^{*1}	46	A
		Ta = 25 °C, DC ^{*1}	25	
		Tc = 25 °C	103	
		Pulsed, Tch < 150 °C ^{*2}	138	
Total Power Dissipation	PD	Ta = 25 °C, DC ^{*1}	2.5	W
		Tc = 25 °C	40	
Thermal Resistance	Channel to Ambient	Rth(ch-a)	50	°C / W
	Channel to Case	Rth(ch-c)	3.1	
Channel Temperature	Tch	150	°C	
Operating ambient temperature	Topr	-40 to +85		
Storage Temperature Range	Tstg	-55 to +150		
Avalanche Current (Single pulse) ^{*3}	IAR	23	A	
Avalanche Energy (Single pulse) ^{*3}	EAR	61	mJ	

Note *1 Device mounted on a glass-epoxy board in Figure 1

*2 Pulse test: Ensure that the channel temperature does not exceed 150 °C

*3 VDD = 24 V, VGS = 10 to 0 V, L = 0.1 mH, Tch = 25 °C (initial)



■ Electrical Characteristics Ta = 25 °C ± 3 °C

Static Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	VDSS	ID = 1 mA, VGS = 0 V	30			V
Zero Gate Voltage Drain Current	IDSS	VDS = 30 V, VGS = 0 V			10	μA
Gate-source Leakage Current	IGSS	VGS = ±16 V, VDS = 0 V			±10	μA
Gate-source Threshold Voltage	Vth	ID = 5.85 mA, VDS = 10 V	1.3		3	V
Drain-source On-state Resistance	RDS(on)1	ID = 23 A, VGS = 10 V		1.6	2.2	mΩ
	RDS(on)2	ID = 23 A, VGS = 4.5 V		1.8	2.5	

Dynamic Characteristics

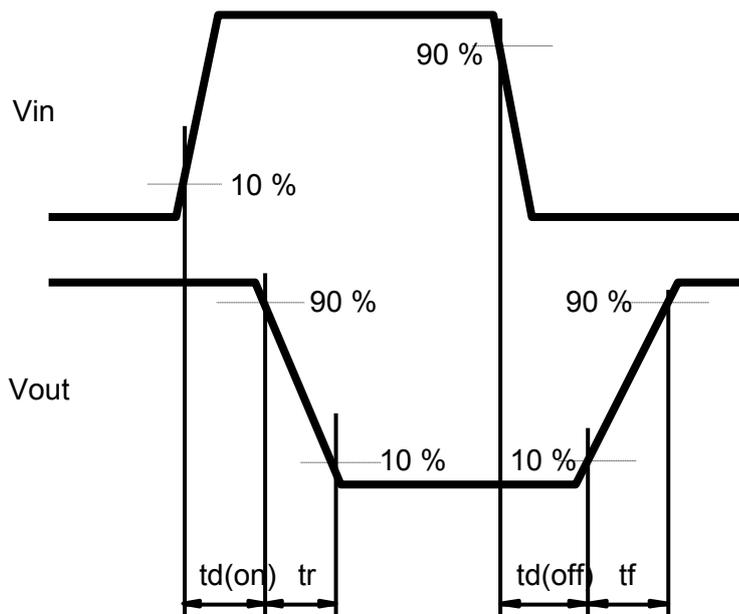
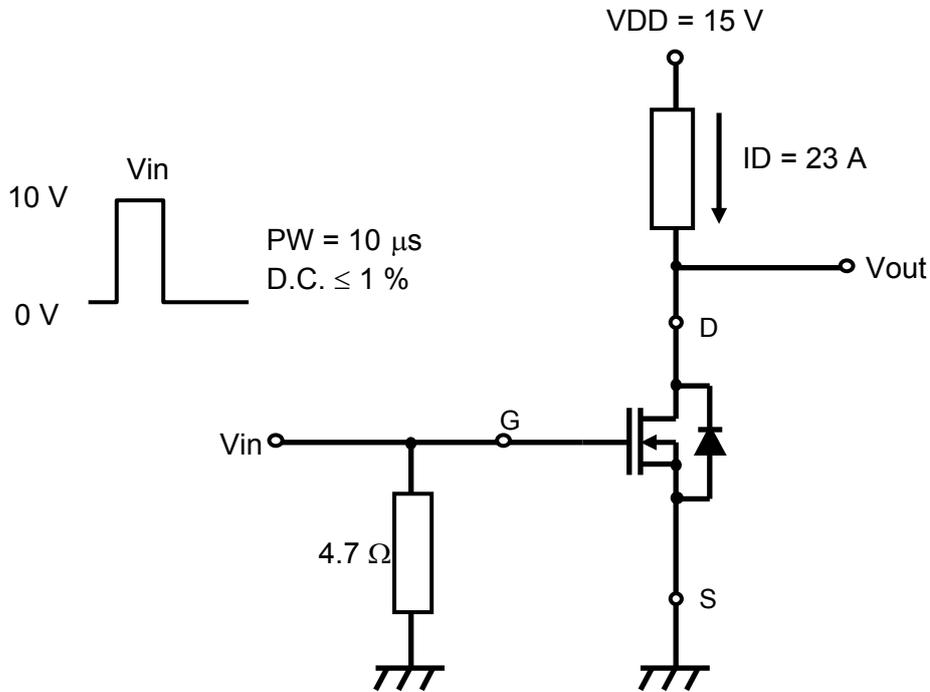
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Capacitance	Ciss	VDS = 10 V, VGS = 0 V f = 1 MHz		4 900	6 860	pF
Output Capacitance	Coss			570	798	
Reverse Transfer Capacitance	Crss			410	656	
Turn-on Delay Time ^{*1}	td(on)	VDD = 15 V, VGS = 0 to 10 V		18		ns
Rise Time ^{*1}	tr	ID = 23 A		14		
Turn-off Delay Time ^{*1}	td(off)	VDD = 15 V, VGS = 10 to 0 V		75		ns
Fall Time ^{*1}	tf	ID = 23 A		11		
Total Gate Charge	Qg	VDD = 15 V, VGS = 0 to 4.5 V ID = 23 A		37		nC
Gate to Source Charge	Qgs			12		
Gate to Drain Charge	Qgd			14		
Gate resistance	rg	f = 5 MHz		1.2	3	Ω

Body Diode Characteristic

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage	VSD	IS = 23 A, VGS = 0 V		0.8	1.2	V

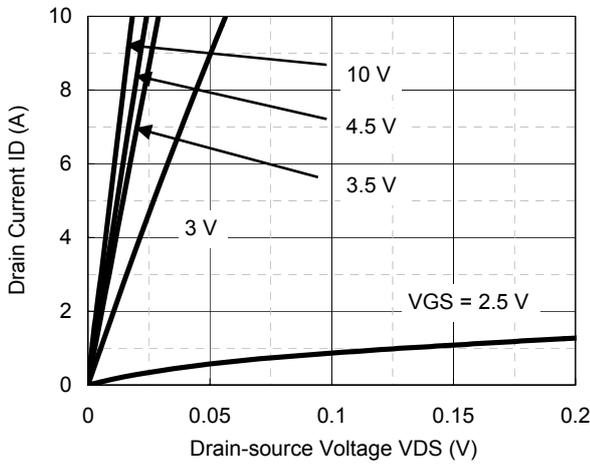
Note : 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.
2. *1 Measurement circuit for Turn-on Delay Time / Rise Time / Turn-off Delay Time / Fall Time

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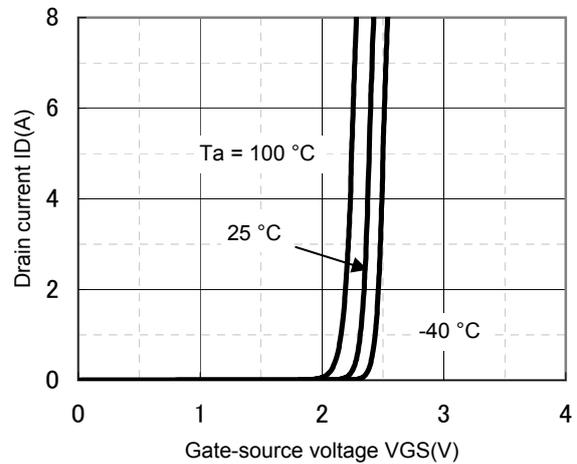


Technical Data (reference)

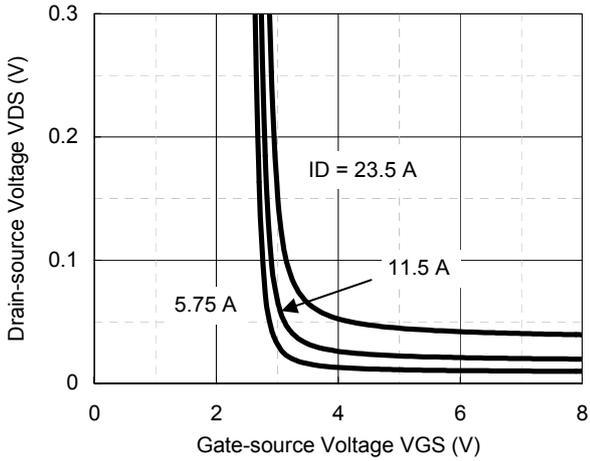
ID - VDS



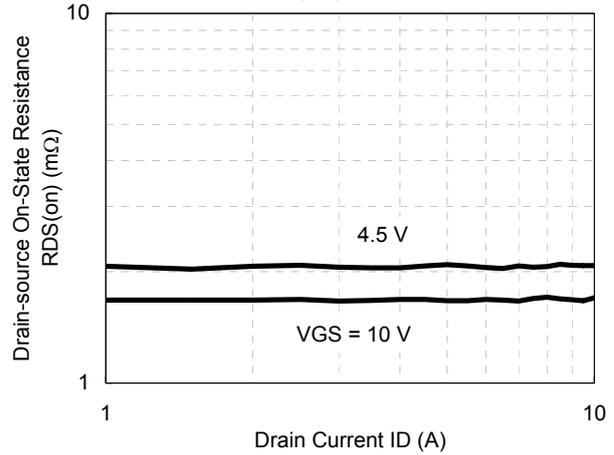
ID - VGS



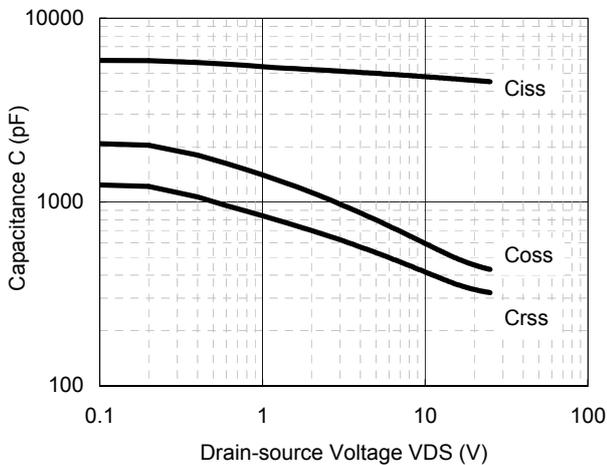
VDS - VGS



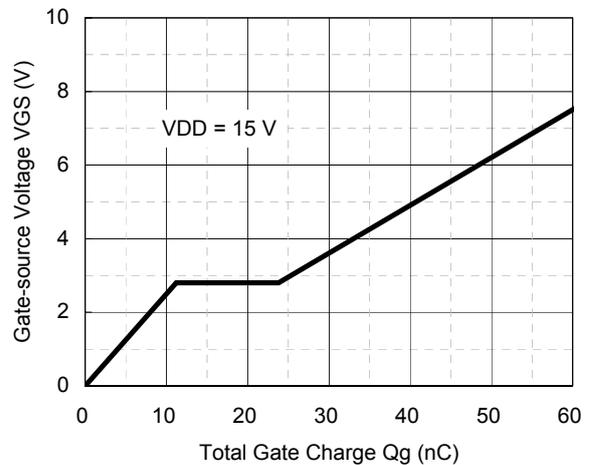
RDS(on) - ID



Capacitance - VDS

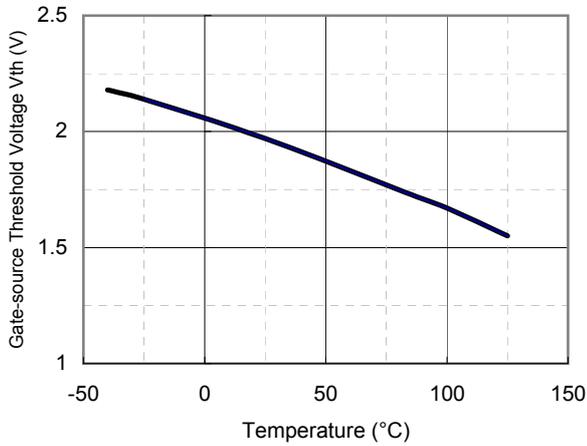


Dynamic Input/Output Characteristics

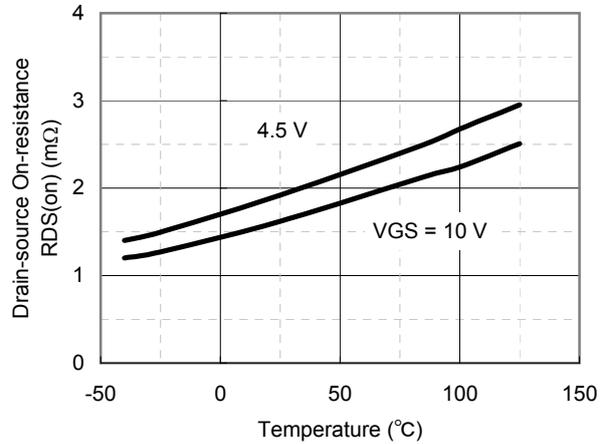


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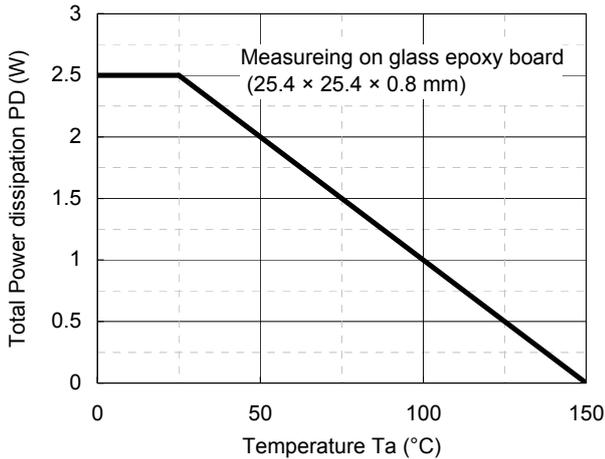
Vth - Ta



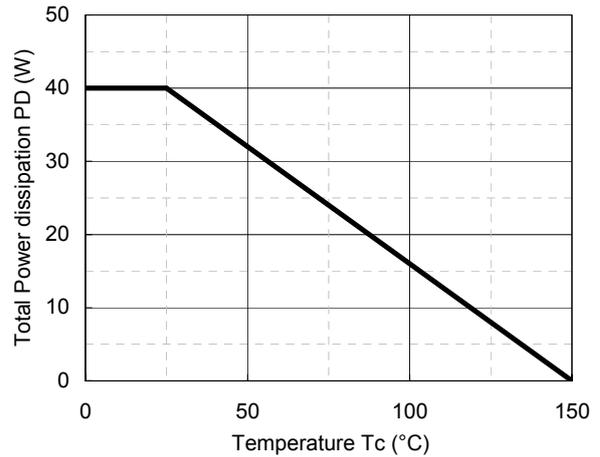
RDS(on) - Ta



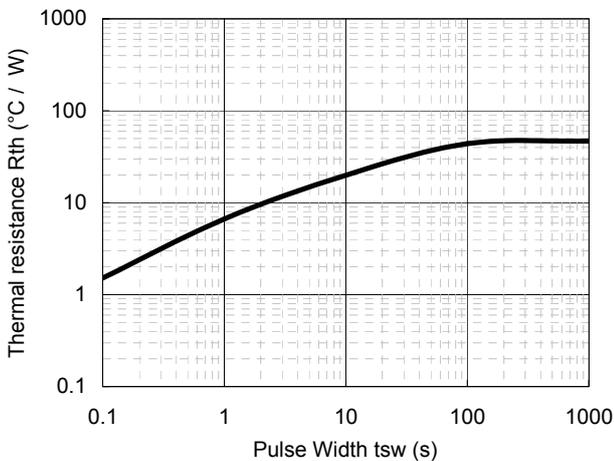
PD - Ta



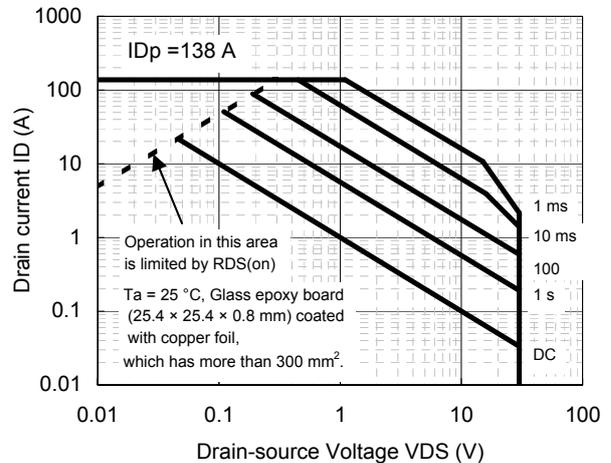
PD - Tc



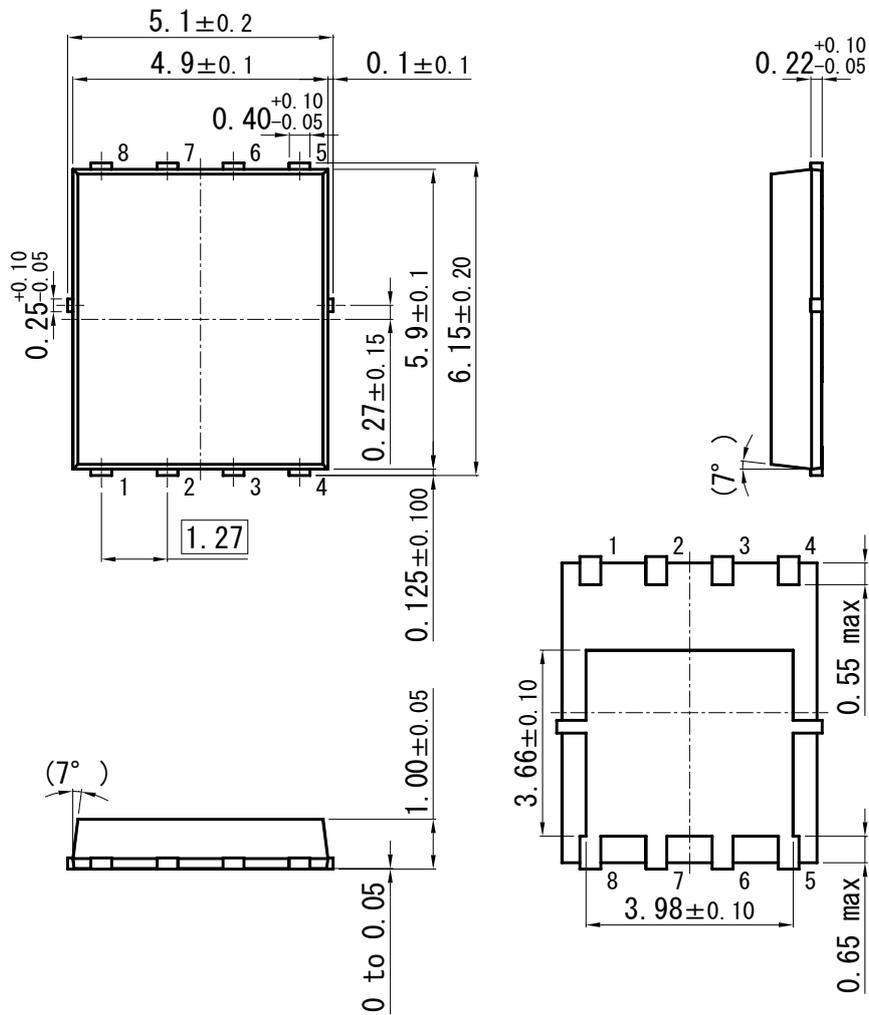
Rth - tsw



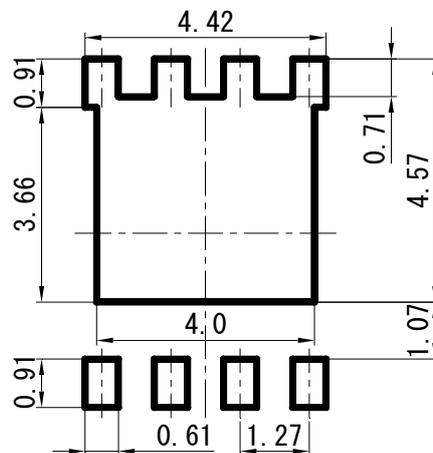
Safe Operating Area



HSO8-F4-B



■ Land Pattern (Reference) (Unit : mm)



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