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MOS FET

Panasonic

SC8673010L

SC8673010L

Asymmetric Dual Silicon N-ch Power MOS FET

For DC-DC Converter

■ Features

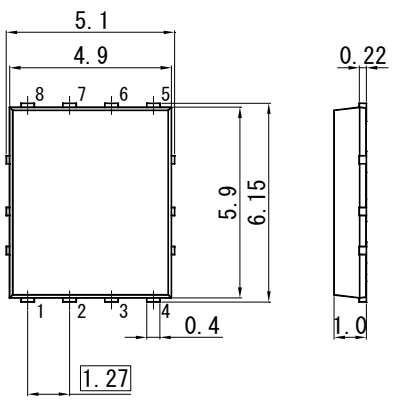
- Low Drain-source On-state Resistance : RDS(on) typ.
  FET1 : 10 mΩ (VGS = 4.5 V), FET2 : 2.5 mΩ (VGS = 4.5 V)
- Halogen-free / RoHS compliant
  (EU RoHS / UL-94 V-0 / MSL : Level 1 compliant)

■ Marking Symbol : A1

■ Packaging

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

Unit : mm



1. Gate(FET1) 5. Source(FET2)
2. Drain(FET1) 6. Source(FET2)
3. Drain(FET1) 7. Source(FET2)
4. Drain(FET1) 8. Gate(FET2)

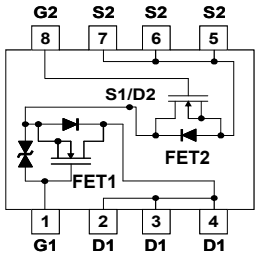
Panasonic	HSO8-F3-B
JEITA	—
Code	—

■ Absolute Maximum Ratings Ta = 25 °C

Parameter		Symbol	Rating FET1	Rating FET2	Unit
Drain to Source Voltage		VDS	30	30	V
Gate to Source Voltage		VGS	±20	±20	
Drain Current	Package limited	ID1	16	40	A
	DC *1	ID2	10	23	
Drain Current (Pulsed) *1 *2		IDp	48	120	
Total Power Dissipation	Ta = 25 °C, DC *1	PD1	1.7	2.5	W
	Ta = 25 °C, DC *3	PD2	1	1	
	Tc = 25 °C	PD3	19	34	
Thermal Resistance	Channel to Ambient *1	Rth(ch-a)1	70	50	°C / W
	Channel to Ambient *3	Rth(ch-a)2	125	120	
	Channel to Case	Rth(ch-c)	6.6	3.7	
Channel Temperature		Tch	150		°C
Operating ambient temperature		Topr	-40 to +85		
Storage Temperature Range		Tstg	-55 to +150		
Avalanche Current (Single pulse) *4		IAR	8	20	A
Avalanche Energy (Single pulse) *4		EAR	8	46	mJ

Note *1 Device mounted on a glass-epoxy board in Figure 1.1 and 1.2
*2 Pulse test : Ensure that the channel temperature does not exceed 150 °C
*3 Device mounted on a glass-epoxy board in Figure 1.3
*4 VDD = 24 V, VGS = 10 to 0 V, L = 0.1 mH, Tch = 25 °C (initial)

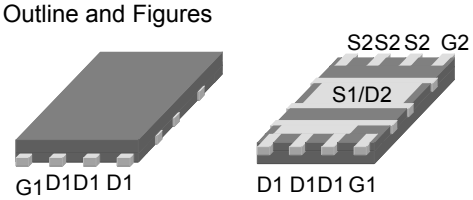
Internal Circuit



Pin Name

1. Gate(FET1) 5. Source(FET2)
2. Drain(FET1) 6. Source(FET2)
3. Drain(FET1) 7. Source(FET2)
4. Drain(FET1) 8. Gate(FET2)

Outline and Figures



FR4 Glass-Epoxy Board (25.4 mm × 25.4 mm × 0.8 mm)

Figure 1.1 (FET1) Figure 1.2 (FET2) Figure 1.3 (FET1, FET2)

Established : 2013-01-24
Revised : 2013-05-29

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

FET1

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 = 1.01 mA, VDS = 10 V	1		3	V
Drain-source On-state Resistance	RDS(on)1	ID = 8 A, VGS = 10 V		7	10	mΩ
	RDS(on)2	ID = 8 A, VGS = 4.5 V		10	14	
Input Capacitance	Ciss	VDS = 10 V, VGS = 0 V f = 1 MHz		780	1 092	pF
Output Capacitance	Coss			160	224	
Reverse Transfer Capacitance	Crss			61	98	
Turn-on Delay Time *1	td(on)	VDD = 15 V, VGS = 0 to 10 V ID = 8 A		7		ns
Rise Time *1	tr			3		
Turn-off Delay Time *1	td(off)	VDD = 15 V, VGS = 10 to 0 V ID = 8 A		34		ns
Fall Time *1	tf			4		
Total Gate Charge	Qg	VDD = 15 V, VGS = 0 to 4.5 V ID = 8 A		6.3		nC
Gate to Source Charge	Qgs			2.5		
Gate to Drain Charge	Qgd			2.1		
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 = 8 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

FET2

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 = 4.38 mA, VDS = 10 V	1.3		3	V
Drain-source On-state Resistance	RDS(on)1	ID = 20 A, VGS = 10 V		1.9	2.5	mΩ
	RDS(on)2	ID = 20 A, VGS = 4.5 V		2.5	3.5	
Input Capacitance	Ciss	VDS = 10 V, VGS = 0 V f = 1 MHz		3 700	5 180	pF
Output Capacitance	Coss			430	602	
Reverse Transfer Capacitance	Crss			310	496	
Turn-on Delay Time *1	td(on)	VDD = 15 V, VGS = 0 to 10 V ID = 20 A		13		ns
Rise Time *1	tr			14		
Turn-off Delay Time *1	td(off)	VDD = 15 V, VGS = 10 to 0 V ID = 20 A		64		ns
Fall Time *1	tf			9		
Total Gate Charge	Qg	VDD = 15 V, VGS = 0 to 4.5 V ID = 20 A		28		nC
Gate to Source Charge	Qgs			9		
Gate to Drain Charge	Qgd			10		
Gate resistance	rg	f = 5 MHz		0.8	3	Ω

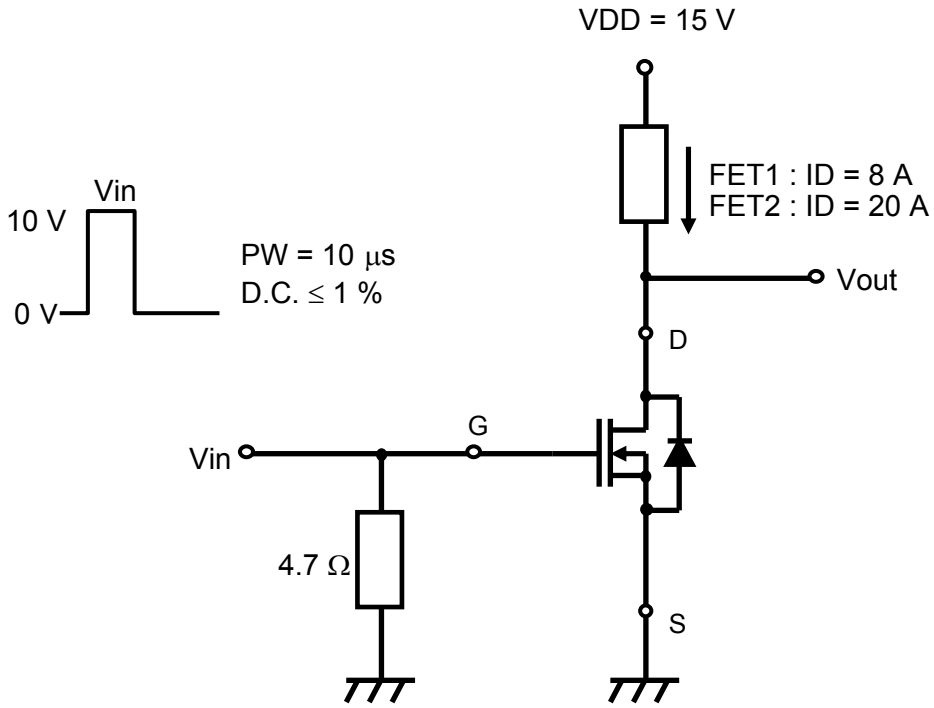
Body Diode Characteristic

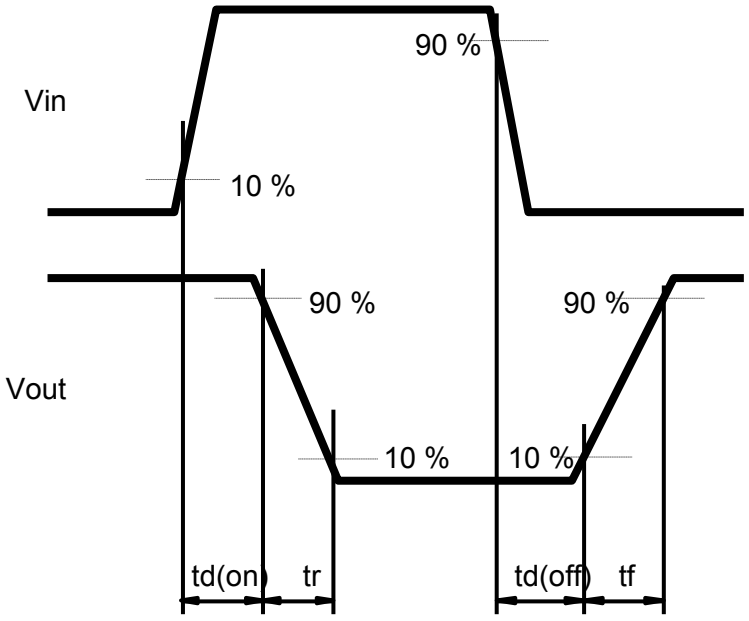
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage	VSD	IS = 20 A, VGS = 0 V		0.9	1.2	V

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

Established : 2013-01-24
Revised : 2013-05-29

*1 Measurement circuit for Turn-on Delay Time / Rise Time / Turn-off Delay Time / Fall Time





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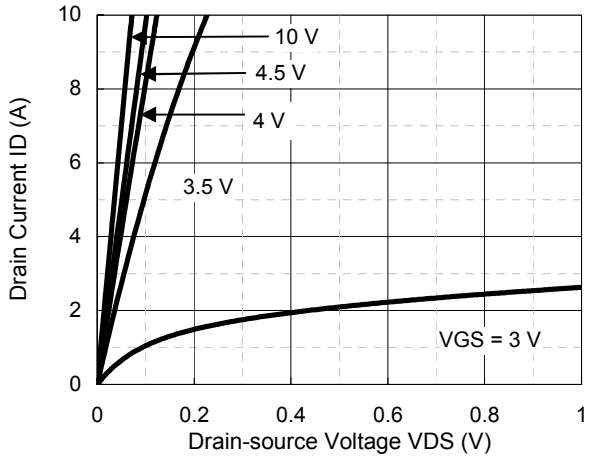
Revised : 2013-05-29

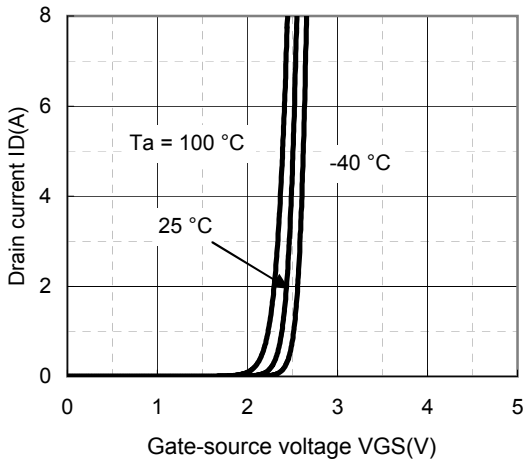
FET1

Technical Data (reference)

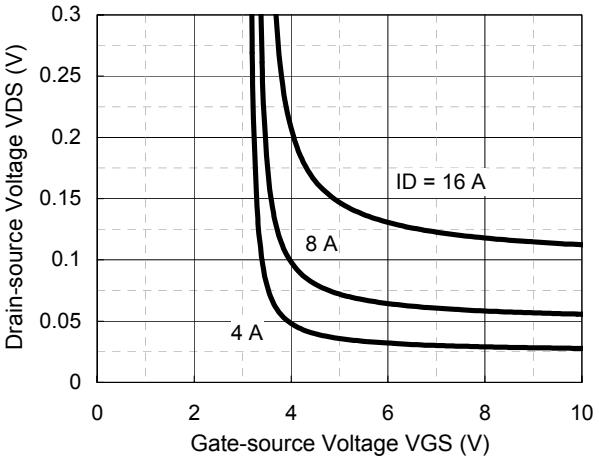
ID - VDS



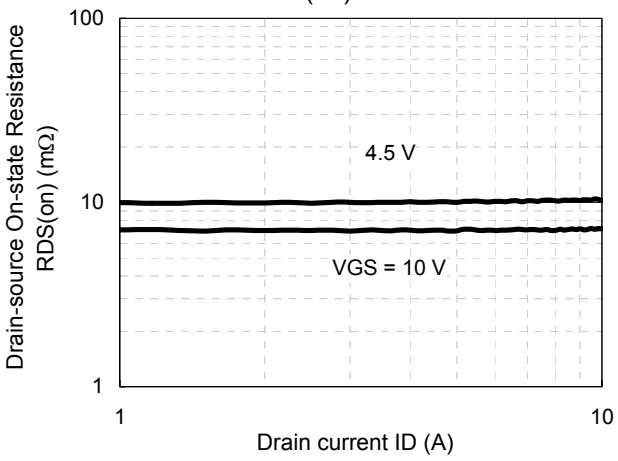
ID - VGS



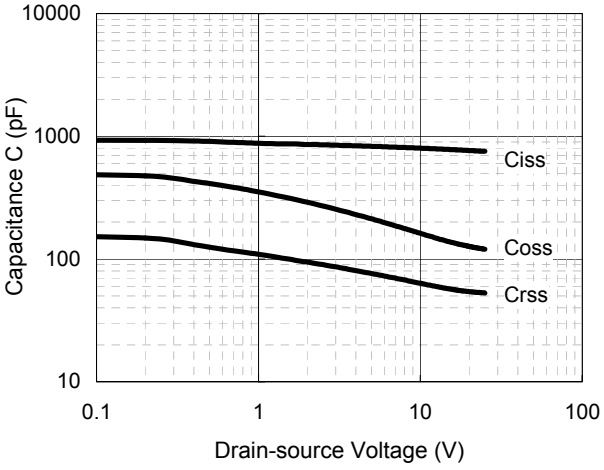
VDS - VGS



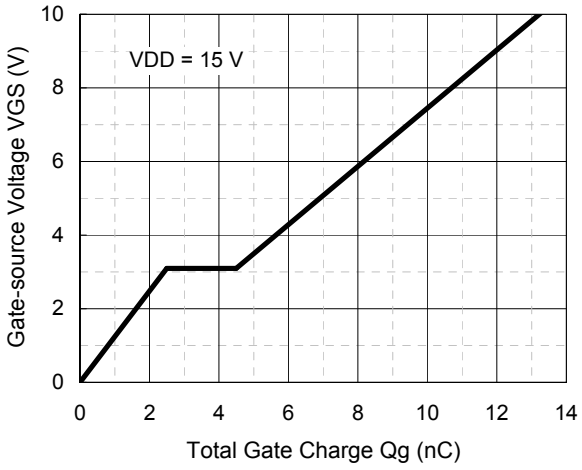
RDS(on) - ID



Capacitance - VDS



Dynamic Input/Output Characteristics



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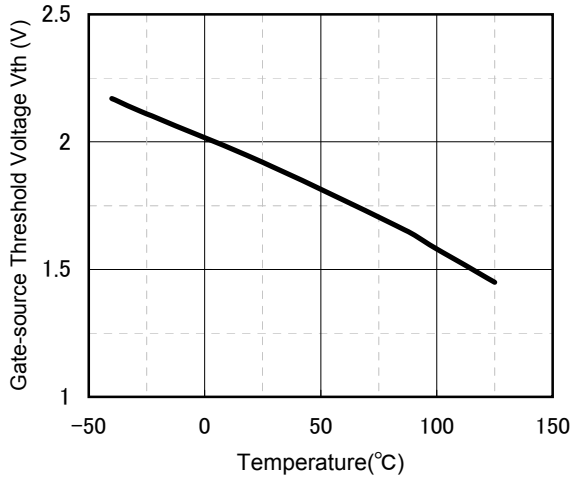
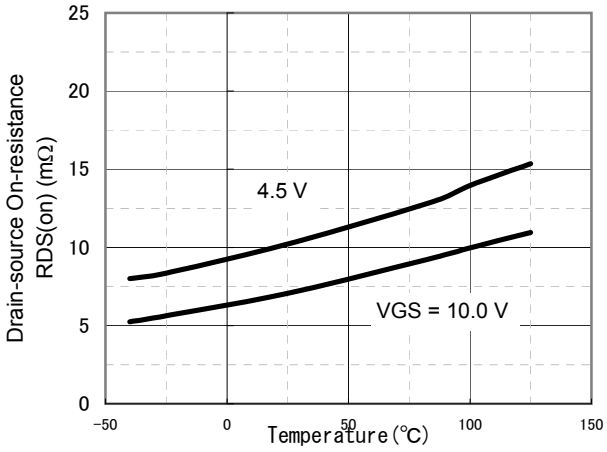
FET1

Technical Data (reference)

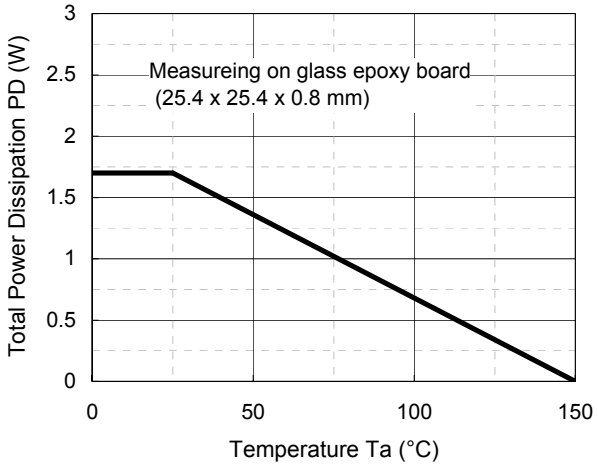
Vth - Ta



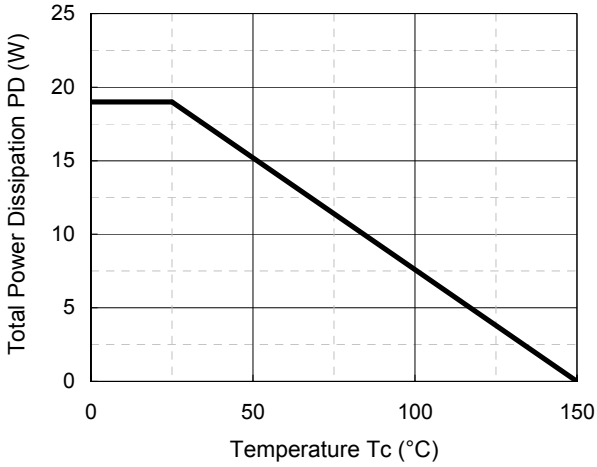
RDS(on) - Ta



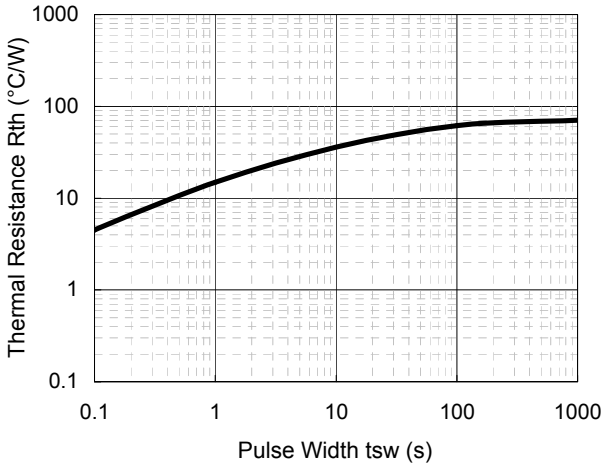
PD - Ta



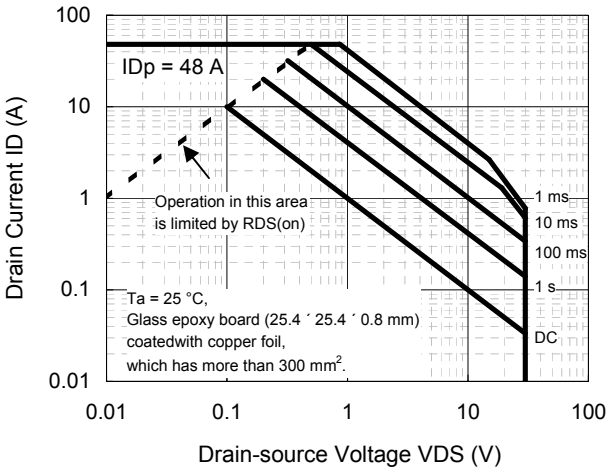
PD - Tc



Rth - tsw



Safe Operating Area



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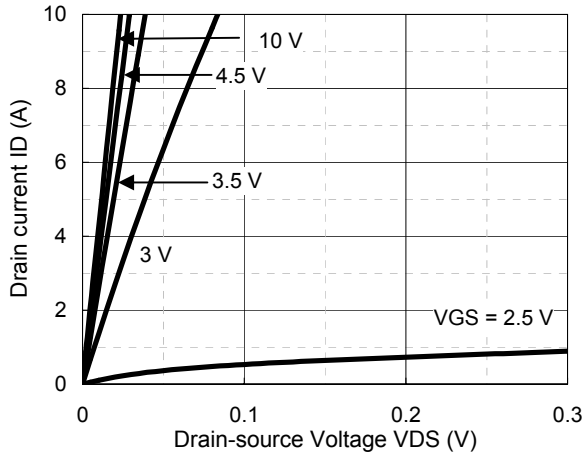
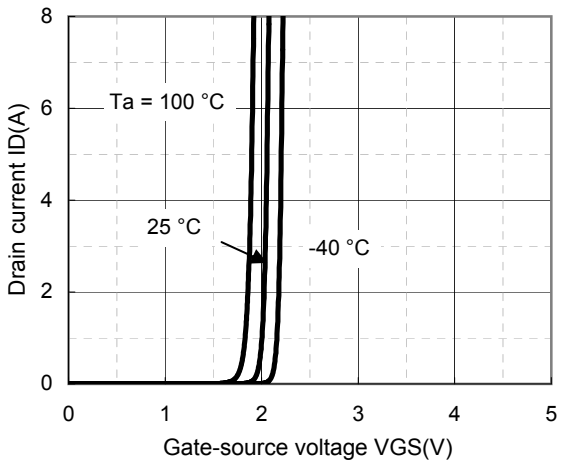
FET2

Technical Data (reference)

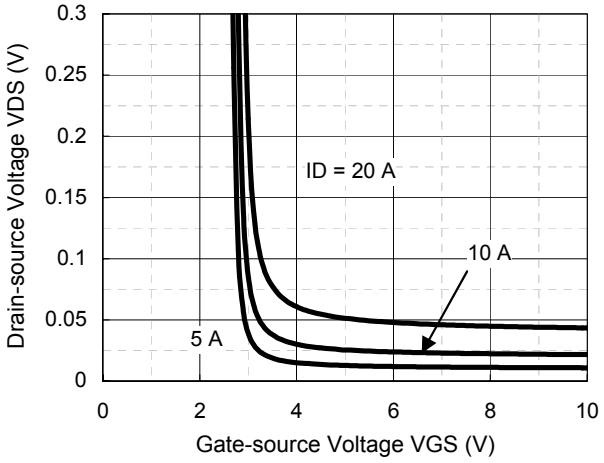
ID - VDS



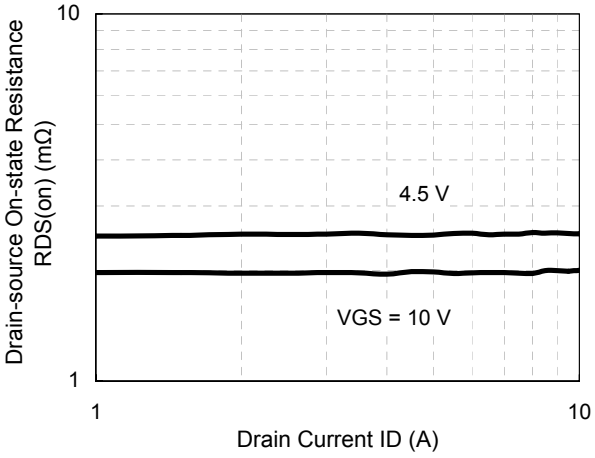
ID - VGS



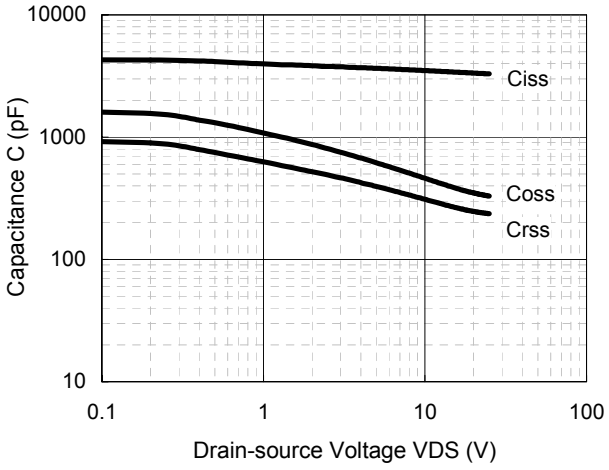
VDS - VGS



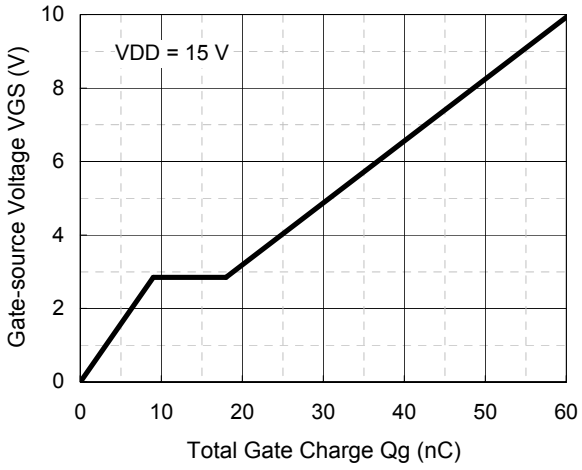
RDS(on) - ID



Capacitance - VDS



Dynamic Input/Output Characteristics



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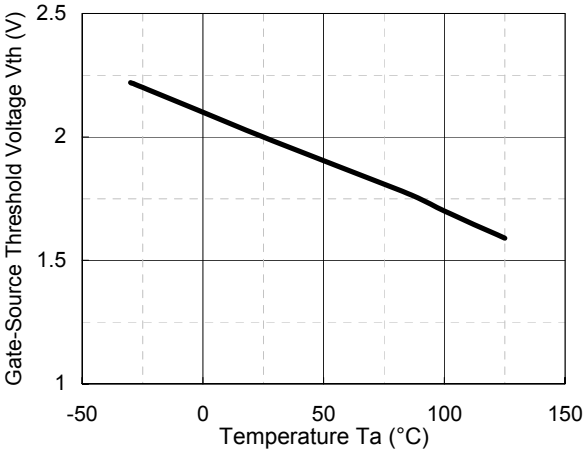
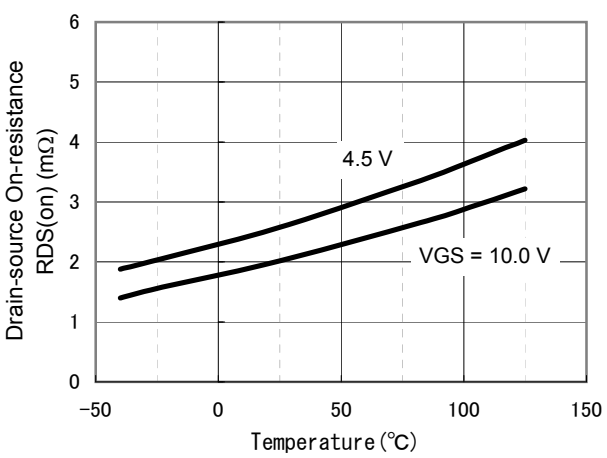
FET2

Technical Data (reference)

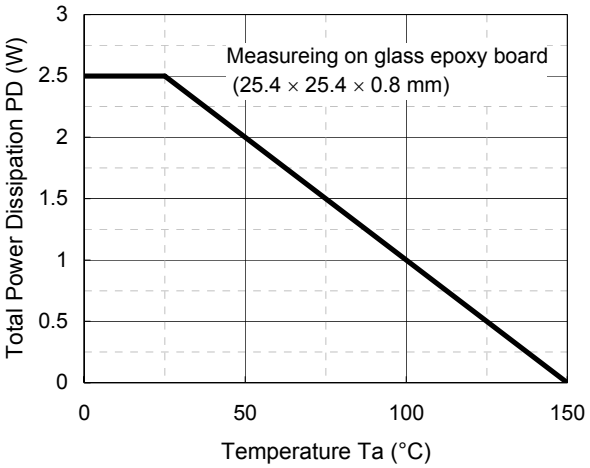
Vth - Ta



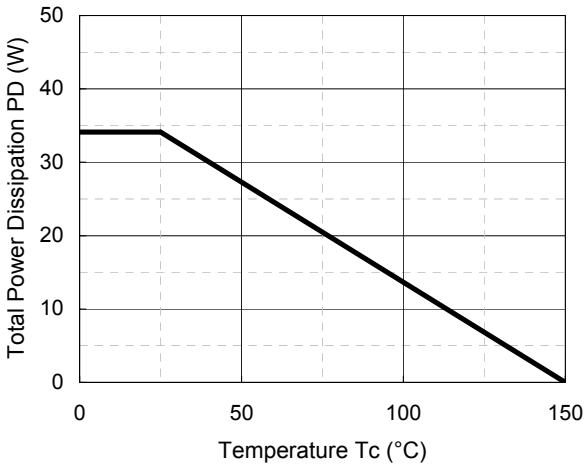
RDS(on) - Ta



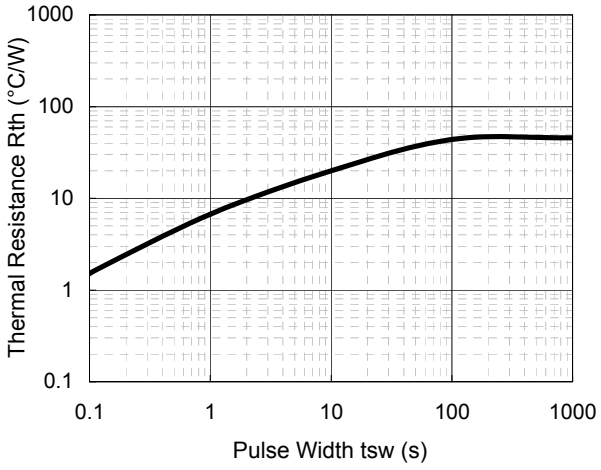
PD - Ta



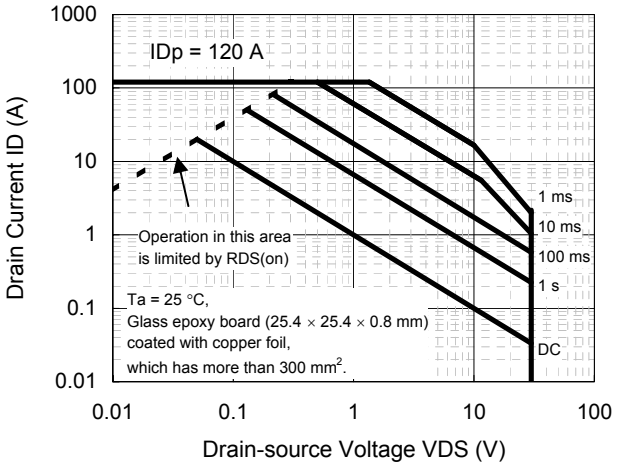
PD - Tc



Rth - tsw



Safe Operating Area



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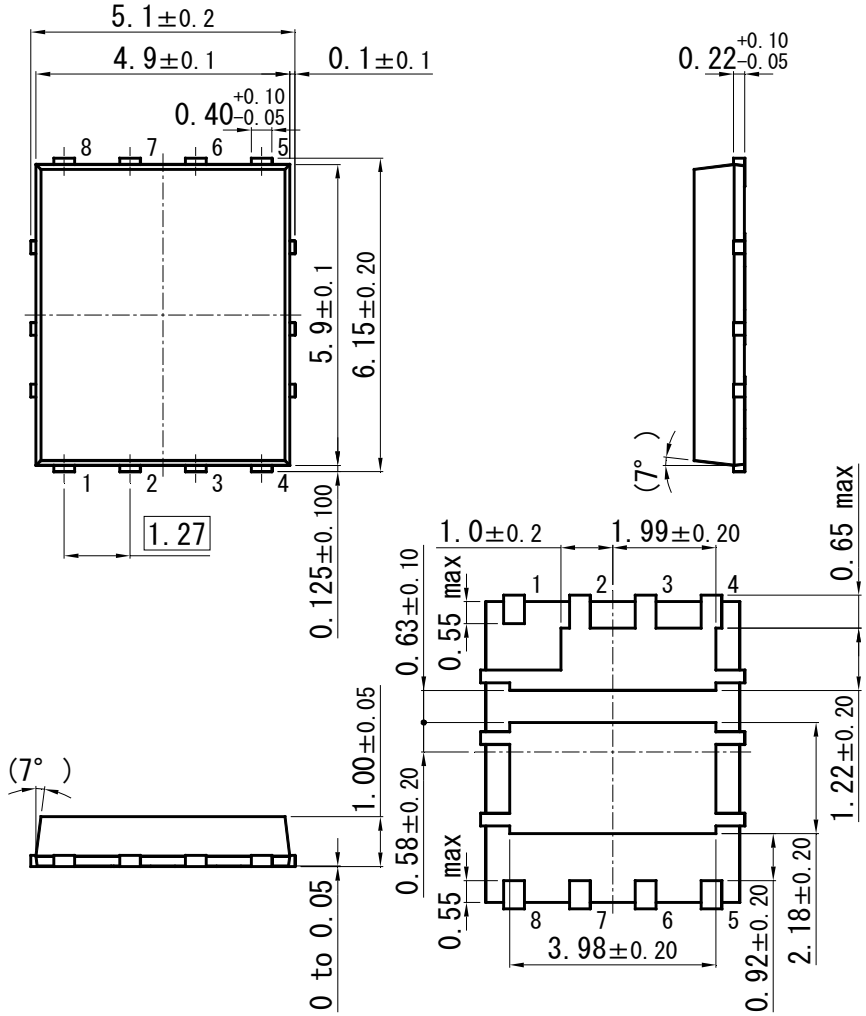
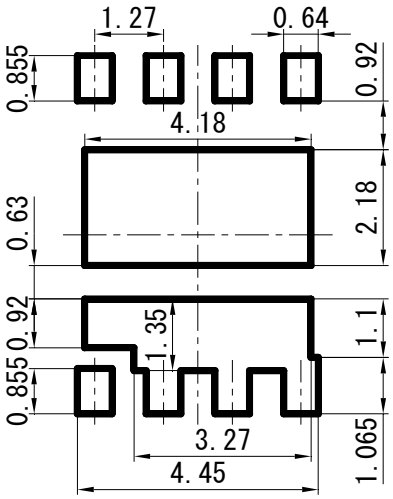
Unit : mm



■ Land Pattern (Reference) (Unit : mm)



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Revised : 2013-05-29

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(6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.

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