

FK8V03030L

Silicon N-channel MOSFET

For lithium-ion secondary battery protection circuit

■ Features

- Low drain-source ON-state Resistance:RDS(on) typ. = 8 mΩ (VGS = 4.5 V)
- High-speed switching :Qg = 10.2 nC
- Halogen-free / RoHS compliant
(EU RoHS / UL-94 V-0 / MSL:Level 1 compliant)

■ Marking Symbol: 3C

■ Packaging

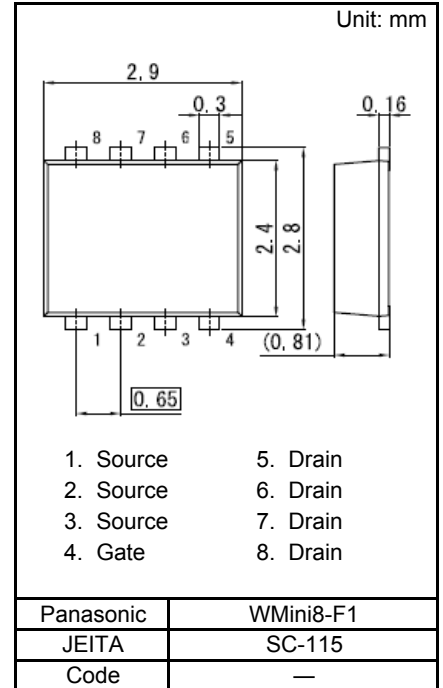
FK8V03030L Embossed type (Thermo-compression sealing):
3 000 pcs / reel (standard)

■ Absolute Maximum Ratings Ta = 25 °C

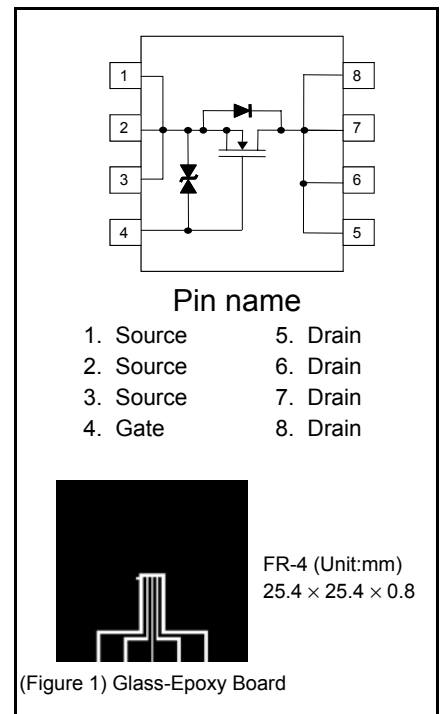
Parameter	Symbol	Rating	Unit
Drain-source Voltage	VDS	33	V
Gate-source Voltage	VGS	±20	V
Drain Current (Steady State) ^{*1}	ID	12	A
Drain Current (t = 10 s) ^{*1}		14	
Drain Current (Pulsed) ^{*1*2}		48	
Source Current (Pulsed) (Body Diode) ^{*1*2}	ISp (BD)	12	
Total Power Dissipation (Steady State) ^{*1}	PD	1	W
Total Power Dissipation (t = 10 s) ^{*1}		1.5	
Channel Temperature	Tch	150	°C
Storage Temperature Range	Tstg	-55 to +150	°C

Note *1 Device mounted on a glass-epoxy board (See Figure 1)

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



- | | |
|-----------|----------|
| 1. Source | 5. Drain |
| 2. Source | 6. Drain |
| 3. Source | 7. Drain |
| 4. Gate | 8. Drain |



■ 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	33			V
Zero Gate Voltage Drain Current	IDSS	VDS = 33 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 = 1.73 mA, VDS = 10 V	1		2.5	V
Drain-source On-state Resistance *1	RDS(on)1	ID = 6 A, VGS = 10 V		5	7	mΩ
	RDS(on)2	ID = 6 A, VGS = 4.5 V		8	13	

Note *1 Pulse test: Ensure that the channel temperature does not exceed 150 °C.

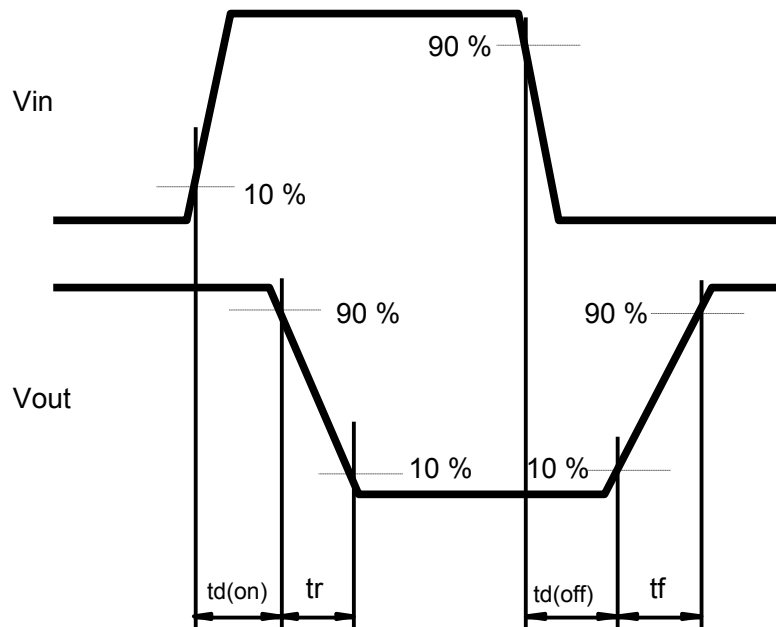
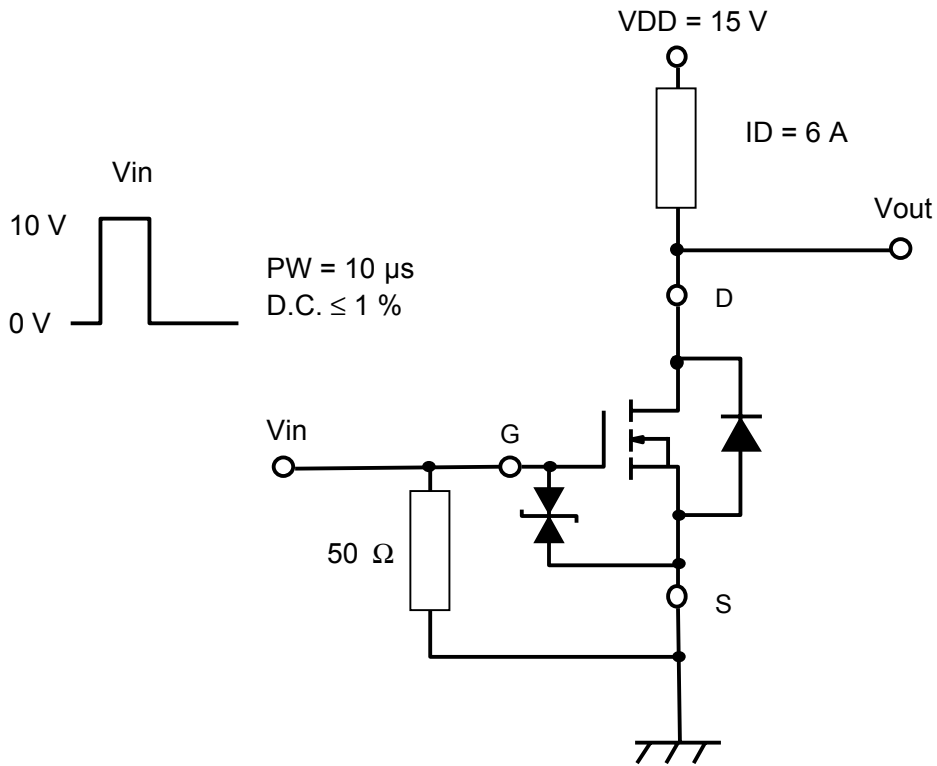
Dynamic Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Capacitance	Ciss	VDS = 10 V, VGS = 0 V, f = 1 MHz		1100		pF
Output Capacitance	Coss			250		
Reverse Transfer Capacitance	Crss			150		
Turn-On Delay Time	td(on)	VDD = 15 V, VGS = 0 to 10 V		12		ns
Rise Time	tr	ID = 6 A (see Figure 2)		7		
Turn-Off Delay Time	td(off)	VDD = 15 V, VGS = 10 to 0 V		61		
Fall Time	tf	ID = 6 A (see Figure 2)		38		
Total Gate Charge	Qg	VDD = 15 V, VGS = 0 to 4.5 V, ID = 12 A		10.2		nC
Gate-source Charge	Qgs			3.1		
Gate-drain Charge	Qgd			4.7		

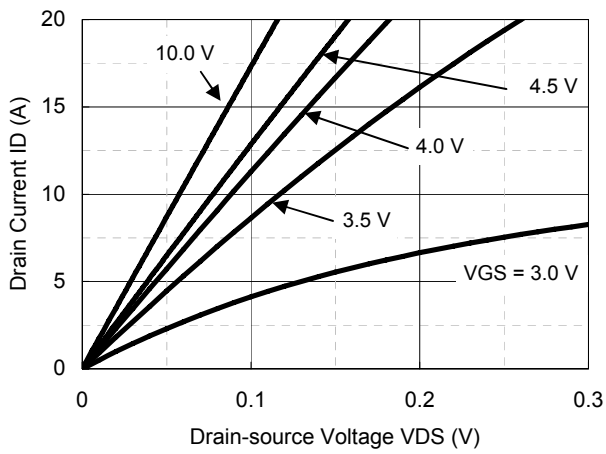
Body Diode Characteristic

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Diode Forward Voltage *1	VSD	IS = 6 A, VGS = 0 V		0.8	1.2	V

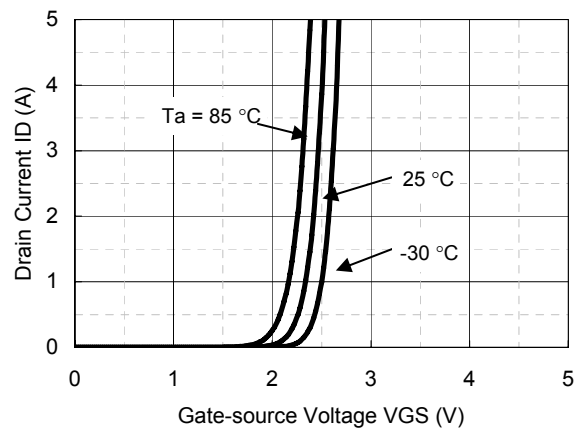
Note *1 Pulse test: Ensure that the channel temperature does not exceed 150 °C.



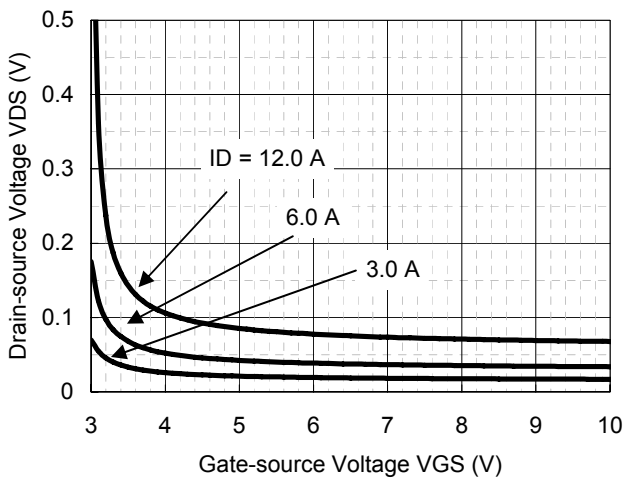
(Figure 2) Measurement circuit for Turn-On Delay Time/Rise Time/Turn-Off Delay Time/Fall Time



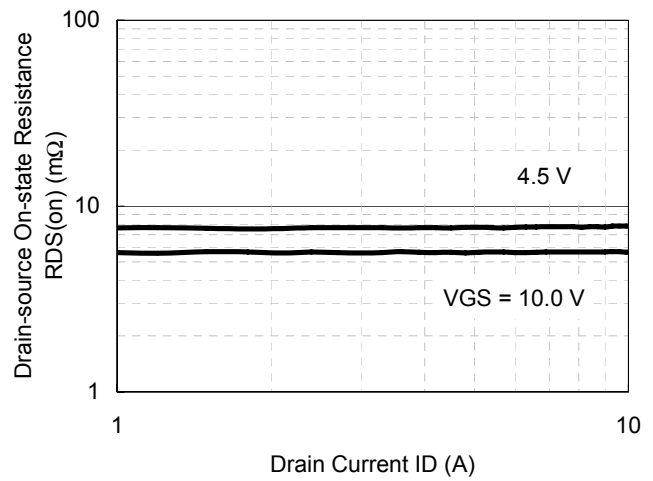
ID - VDS



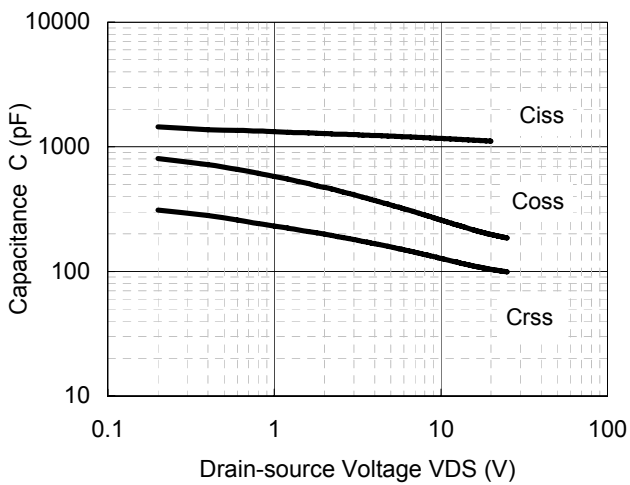
ID - VGS



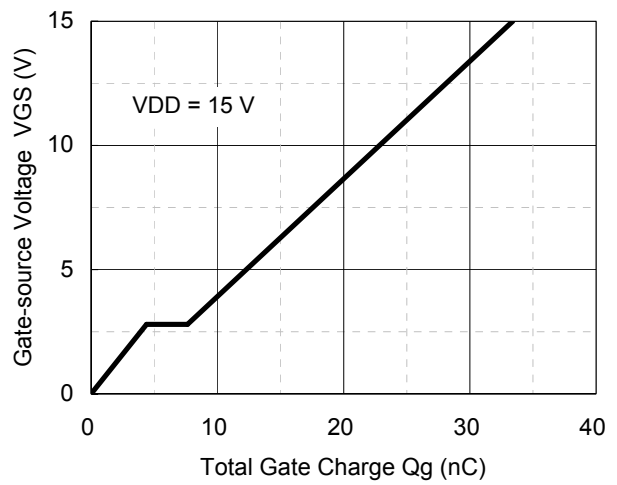
VDS - VGS



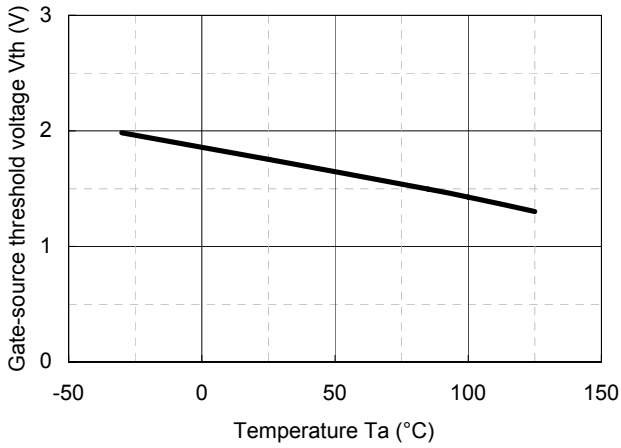
RDS(on) - ID



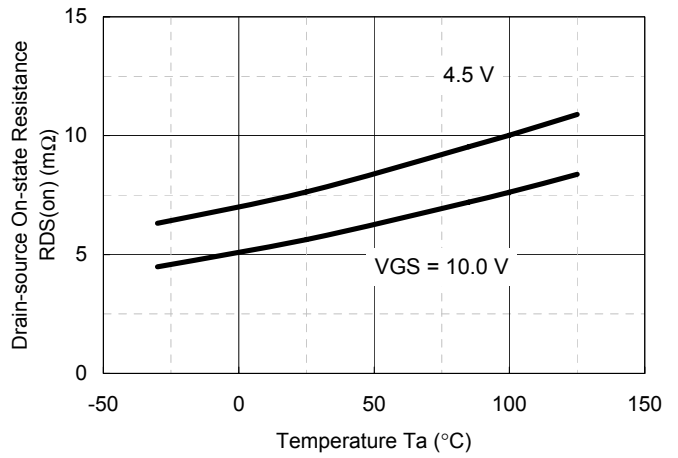
Capacitance - VDS



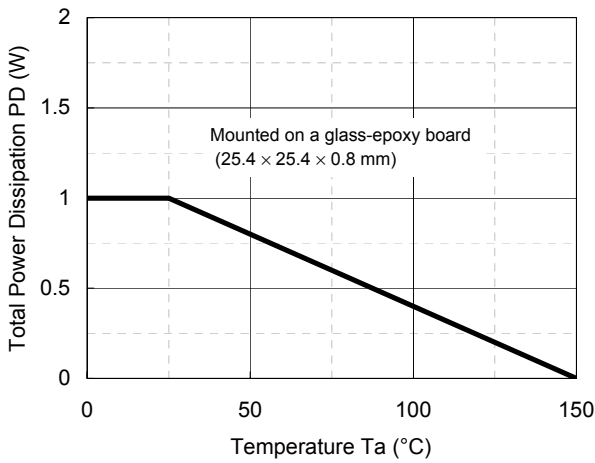
Dynamic Input/Output Characteristics



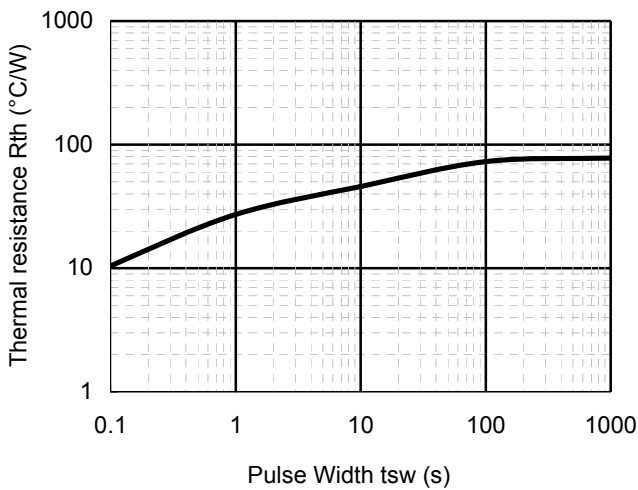
$V_{th} - T_a$



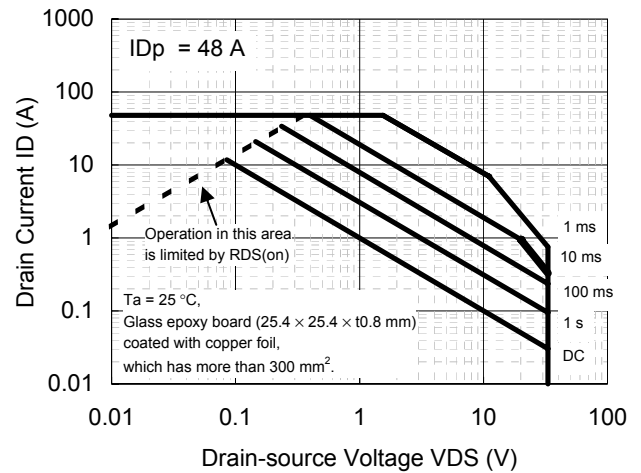
$R_{DS(on)} - T_a$



$P_D - T_a$



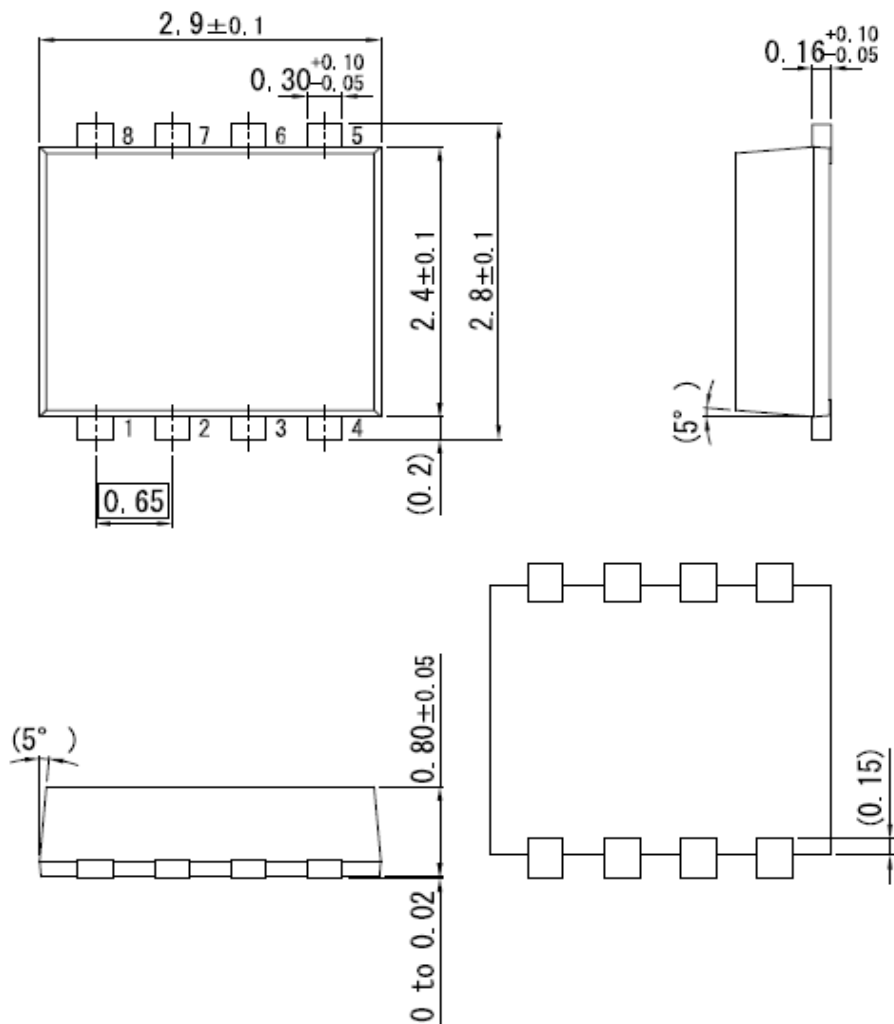
$R_{th} - t_{sw}$



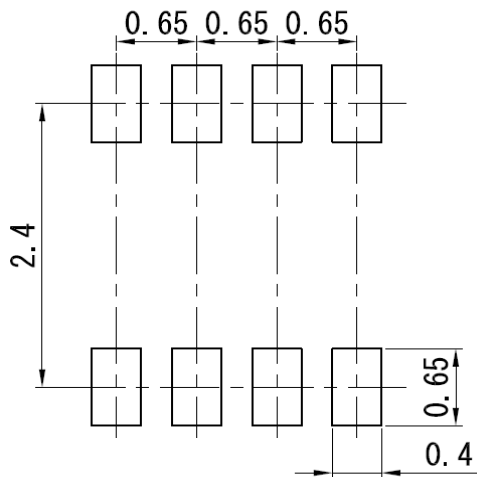
Safe Operating Area

WMini8-F1

Unit: mm



■ Land Pattern (Reference) (Unit: mm)



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