GOSTONE

RoHS COMPLIANT

GTD2001A

Dual N-channel Power MOSFET
20V, 11.9mohm, 9.7A

Product Summary

VSSS	VGSS	RSS(ON) TYP/MAX	IS MAX
20V	± 8V	9.4/11.9mΩ@VGS=4.5V 10.0/12.9mΩ@VGS=3.8V 11.1/15.8mΩ@VGS=3.1V 13.4/22.6mΩ@VGS=2.5V	9.7A

Features

- CSP (Chip Size Package)
- Halogen-Free / RoHS Compliant
- 2.5V Drive Low Source-Source On-State Resistance
- Gate Resistor Installed Common-Drain Type MOSFET
- ESD Protection Diode Installed (Gate-Source)

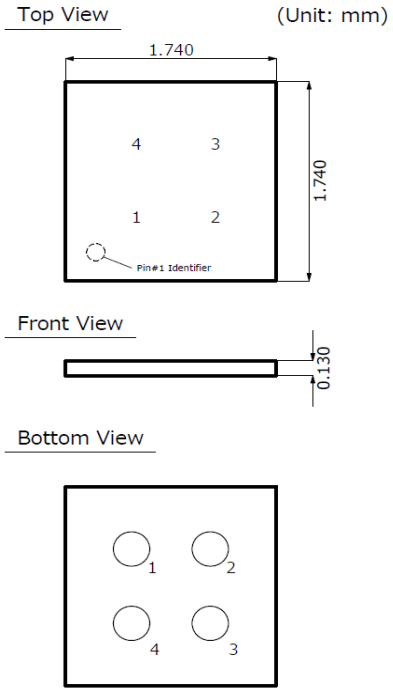
Package & Internal Circuit

GS: Gostone
L: Marking Device Code (fixed)
D: Factory Code
Y: Year Code
W: Week Code
L: LOT Code
●Pin#1 Identifier

Ordering Information

Tape & Reel Embossed Type: 8,000pcs / reel

Pin Assignment

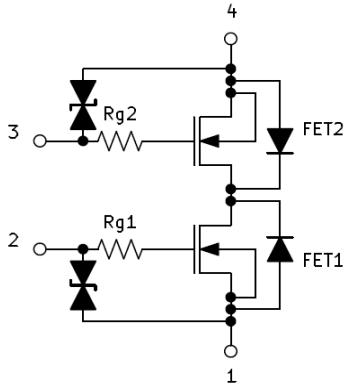


FET1 1: Source1, 2: Gate1
FET2 4: Source2, 3: Gate2

Absolute Maximum Rating (Ta=25°C)

Parameter		Symbol	Rating	Unit
Source to Source Voltage		VSS	20.0	V
Gate to Source Voltage		VGS	±8	V
Source Current	DC	IS1 *1	5.6	A
	DC	IS2 *2	9.7	A
	Pulse	ISP *2*3	39	A
Total Dissipation	DC	PD1 *1	0.4	W
	DC	PD2 *2	1.18	W
Junction Temperature		Tj	150	℃
Storage Temperature		Tstg	-55 to +150	℃

Equivalent Circuit



Thermal Characteristic (Ta=25°C)

Parameter	Symbol	Rating	Unit
Thermal Resistance	Rth *1	311	℃/W
	Rth *2	106	℃/W

Note *1 Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm)
with minimum copper pad (44.6mm2, 36μm thickness copper)
Note *2 Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm)
with maximum copper pad (617.5mm2, 36μm thickness copper)
Note *3 t=10μs, duty cycle ≤ 1%

Electrical characteristics (Ta=25°C ± 3°C)

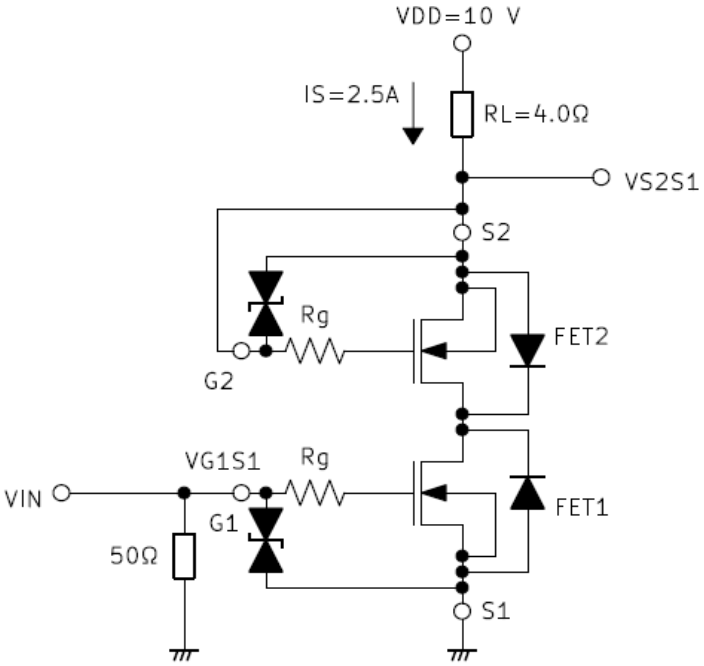
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Source-Source Breakdown Voltage	VSSS	IS=1mA, VGS=0V	20.0			V
Zero Gate Voltage Source Current	ISSS	VSS=20V, VGS=0V			1.0	μA
Gate-Source Leakage Current	IGSS1 IGSS2	VGS=±8V, VSS=0V VGS=±5V, VSS=0V			±10 ±1.0	μA
Gate-Source Threshold Voltage	Vth	VSS=10.0V, IS=1.0mA	0.35	0.9	1.4	V
Source-Source On-State Resistance	RSS(on)1 RSS(on)2 RSS(on)3 RSS(on)4	IS=2.5A, VGS=4.5V IS=2.5A, VGS=3.8V IS=2.5A, VGS=3.1V IS=2.5A, VGS=2.5V	7.0 7.3 8.1 8.6	9.4 10.0 11.1 13.4	11.9 12.9 15.8 22.6	mΩ
Body Diode Forward Voltage	VF(S-S)	IF=2.5A, VGS=0V		0.7	1.2	V
Input Capacitance *1 Output Capacitance *1 Reverse Transfer Capacitance *1	Ciss Coss Crss	VSS=10V, VGS=0V, f=1kHz		2,539 210 178		pF
Turn-On Delay Time *1 *2 Rise Time *1 *2	td(on) tr	VDD=10V, VGS=0 to 4.0V, IS=2.5A		0.4 0.6		μs
Turn-Off Delay Time *1 *2 Fall Time *1 *2	td(off) tf	VDD=10V, VGS=4.0 to 0V, IS=2.5A		2.9 1.3		μs
Total Gate Charge *1 Gate-Source Charge *1 Gate-Drain Charge *1	Qg Qgs Qgd	VDD=10V, VGS=0 to 4.0V, IS=2.5A		22.8 4.0 6.3		nC
Gate Resistance *1	Rg	f=1MHz		900		Ω

Note *1 Guaranteed by Design

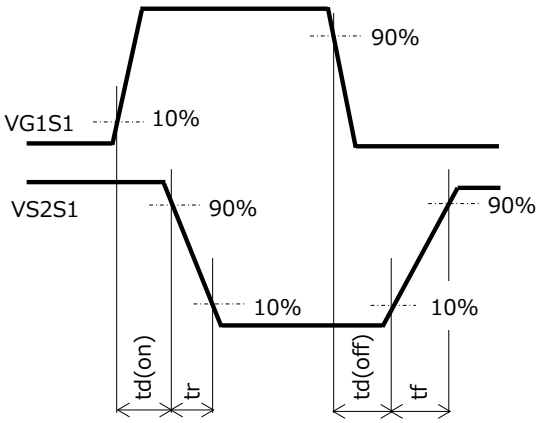
Note *2 Measurement Circuit for Switching Characteristics

- FET1 Measurement Circuit for Switching Characteristics td(on), tr, td(off), tf

(FET2: Gate-Source Short)

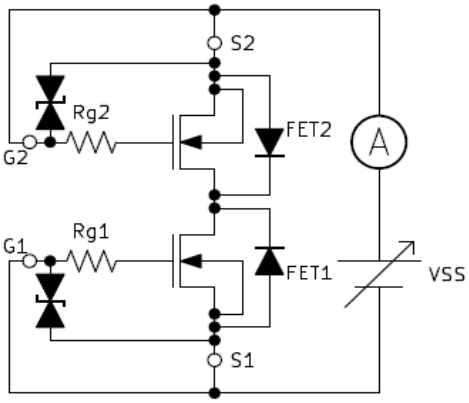


(Definition of Switching Measurement Detection)

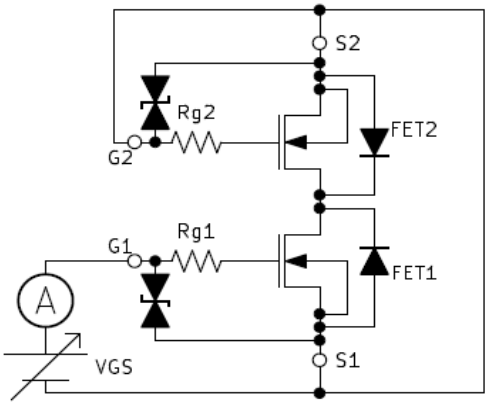


Test circuits for FET1

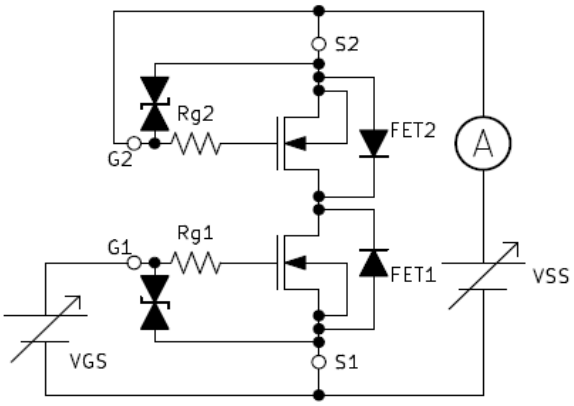
Test Circuit 1
VSSS/ISSS



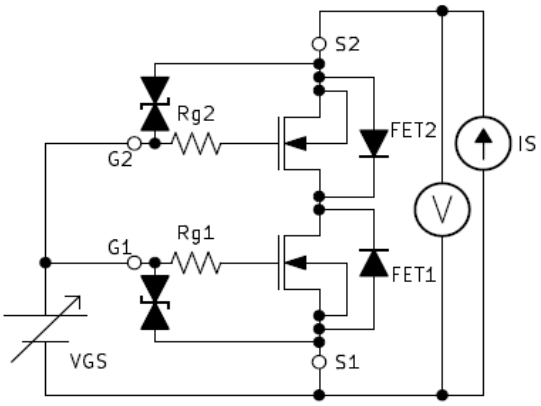
Test Circuit 2
IGSS1/2



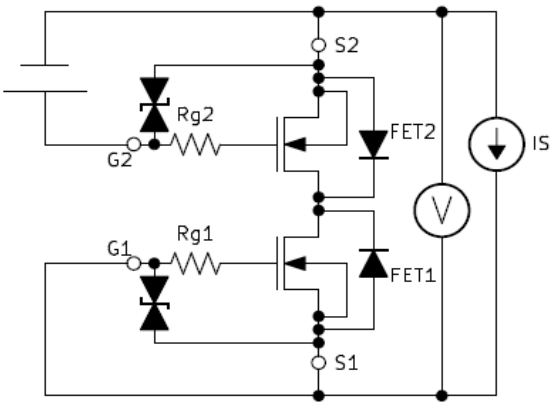
Test Circuit 3
Vth



Test Circuit 4
RSS(on)

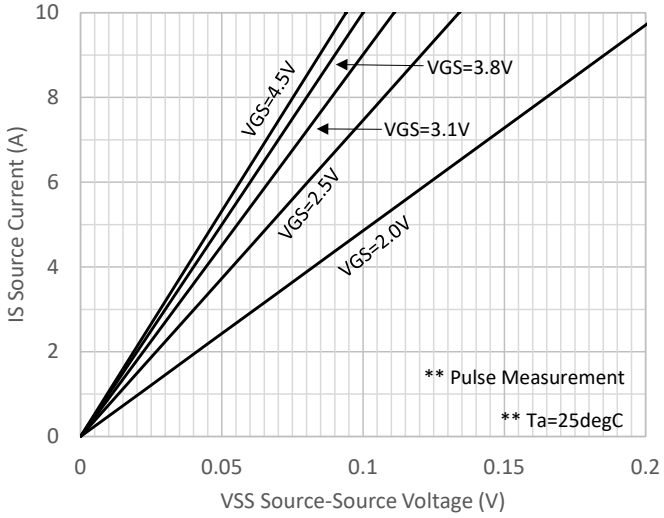


Test Circuit 5
VF(S-S)

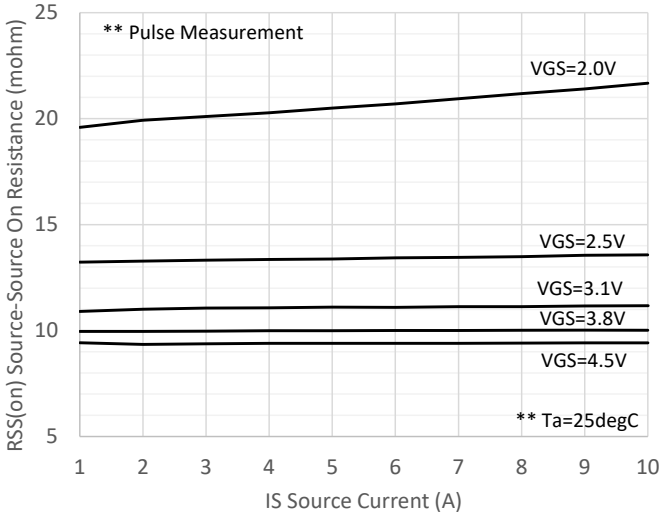


Technical data

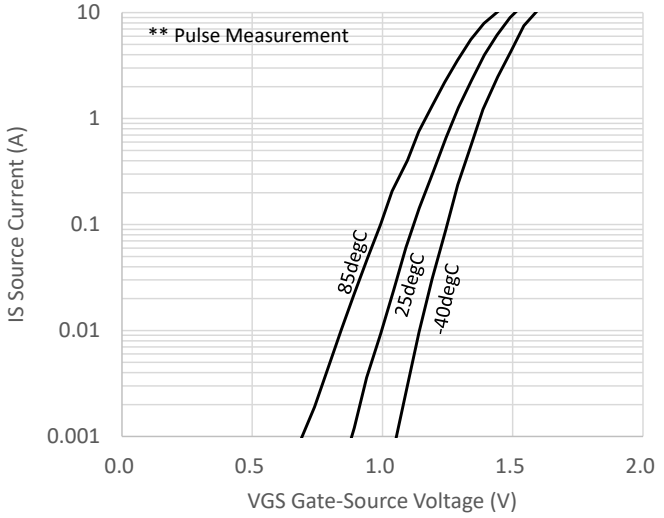
IS to VSS



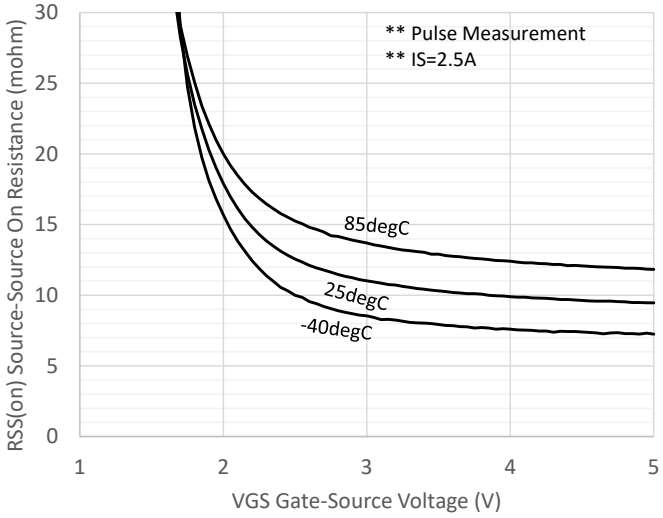
RSS(on) to IS



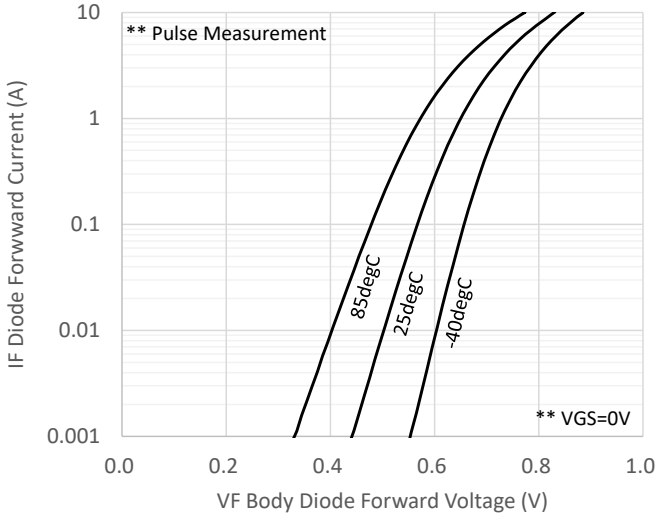
IS to VGS



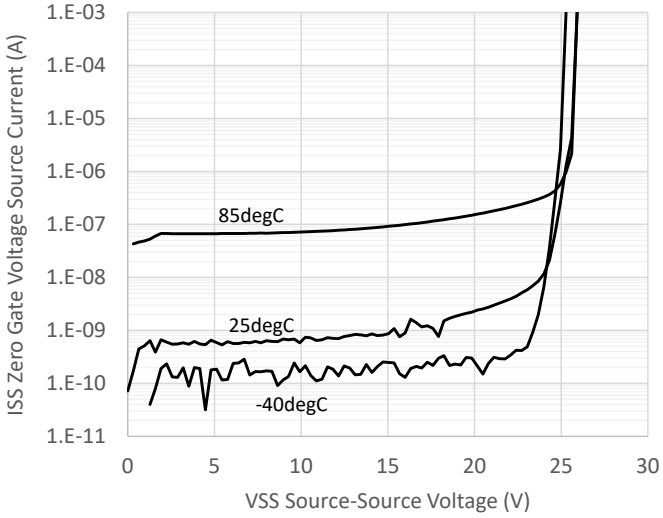
RSS(on) to VGS



IF to VF

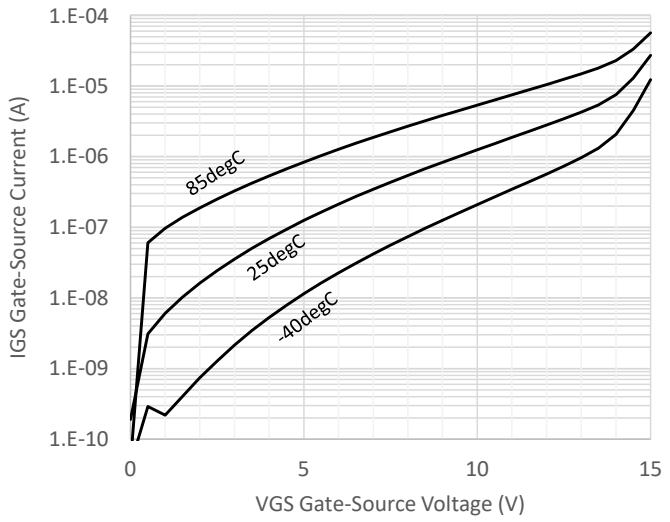


ISS to VSS

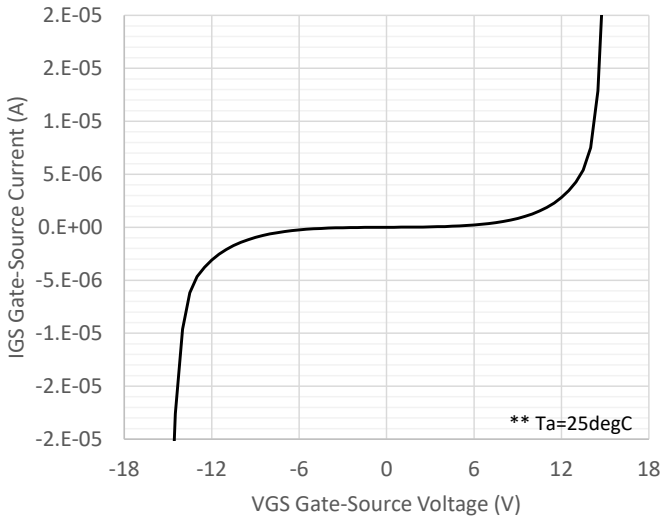


Technical data

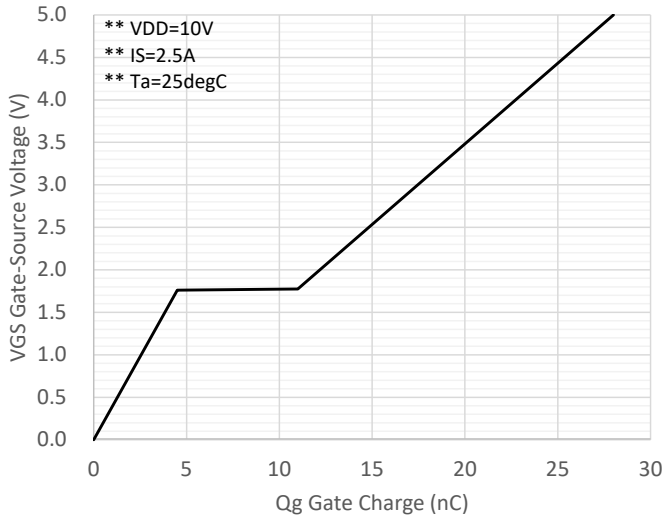
IGS to VGS



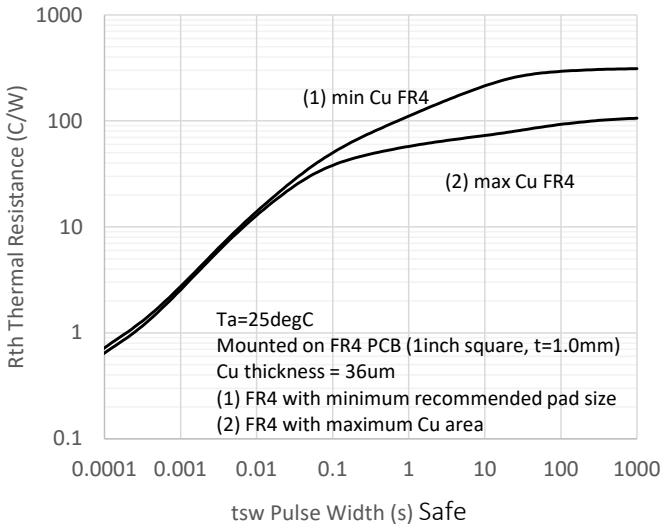
IGS to VGS



Dynamic Input / Output Characteristics

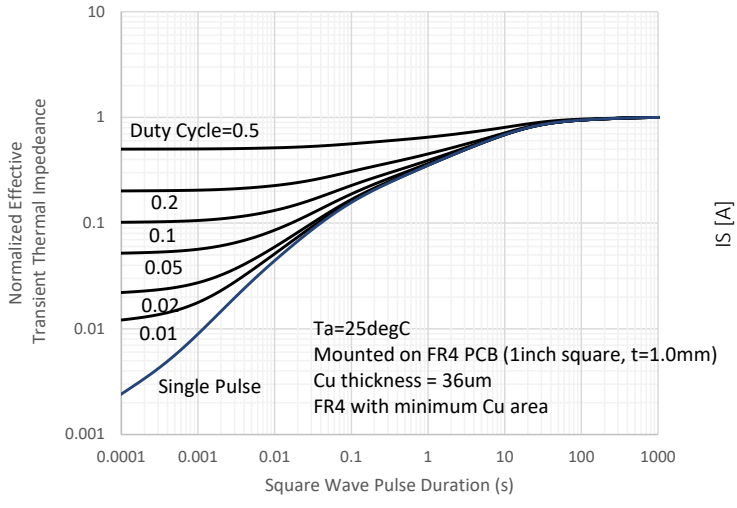


Rth to tsw

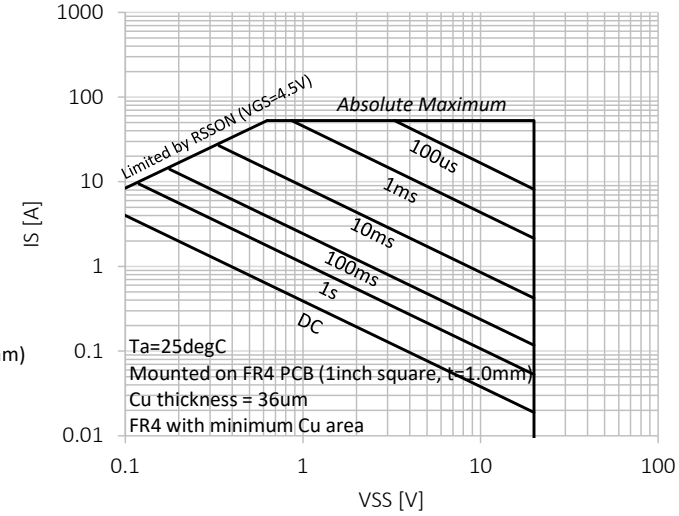


Safe

Thermal Response



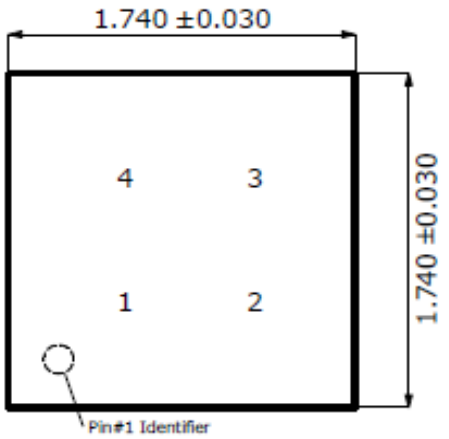
Safe Operating Area



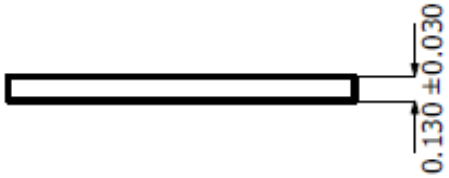
Package outline dimensions

(Unit: mm)

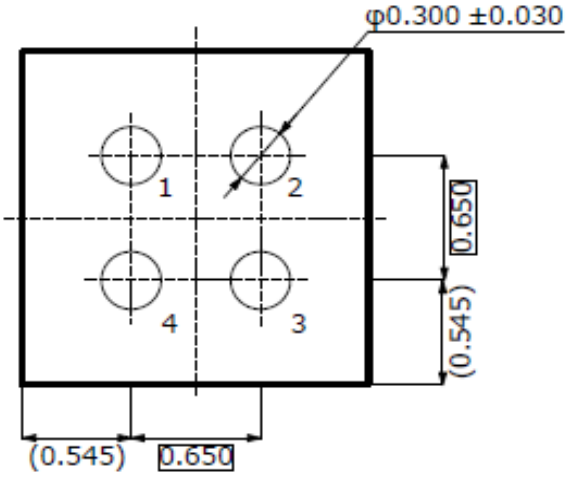
Top View



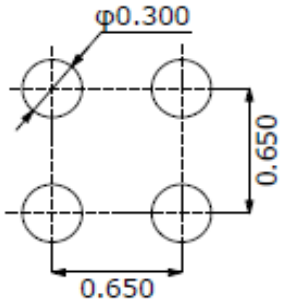
Front View



Bottom View



(Reference) Board Land and Stencil Mask Pattern



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