GOSTONE

RoHS COMPLIANT

Dual N-channel Power MOSFET
12V, 4.0mohm, 17.0A

GTD1203A

Product Summary

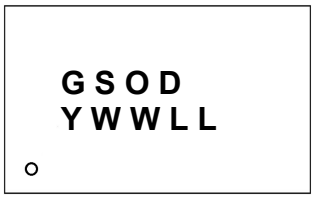
VSSS	VGSS	RSS(ON) TYP/MAX	IS MAX
12V	± 10.5V	4.0/5.1mΩ@VGS=4.5V 4.3/5.5mΩ@VGS=3.8V 4.8/6.8mΩ@VGS=3.1V 5.9/10.0mΩ@VGS=2.5V	17.0A

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)

Marking Symbol Code

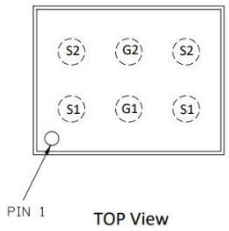
❖ Laser Marking Device Code: O



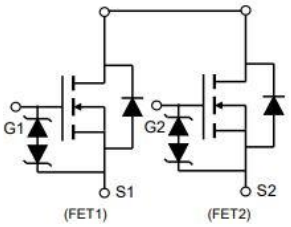
GS: Gostone
O: Marking Device Code (fixed)
D: Factory Code
Y: Year Code
W: Week Code
L: LOT Code
○: Pin#1 Identifier

Application

- ❖ Battery Protection Switch
- ❖ Mobile Device Battery Charging and Discharging



TOP View



Ordering Information:

Part Number	Case	Packaging
GTD1203A	WLCSP2.14X1.67_6	8,000/Reel

Absolute maximum rating@25℃

Parameters	Symbol	Rating	Units
Source-Source Voltage	V_{SS}	12	V
Gate-Source Voltage	V_{GS}	±10.5	V
Source Current (DC)	IS1 *1	8.8	A
	IS2 *2	17	A
Source Current(Pulse)	ISP *2*3	80	A
Power Dissipation	PD1 *1	0.42	W
	PD2 *2	1.47	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃

Thermal Characteristic

Characteristic	Symbol	Rating	Unit
Thermal Resistance	Rth *1	297	°C/W
	Rth *2	85	°C/W

Note *1 Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm)
with minimum copper pad (45.5mm2, 36μm thickness copper)
Note *2 Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm)
with maximum copper pad (615.5mm2, 36μm thickness copper)
Note *3 t=10μs, duty cycle ≤ 1%

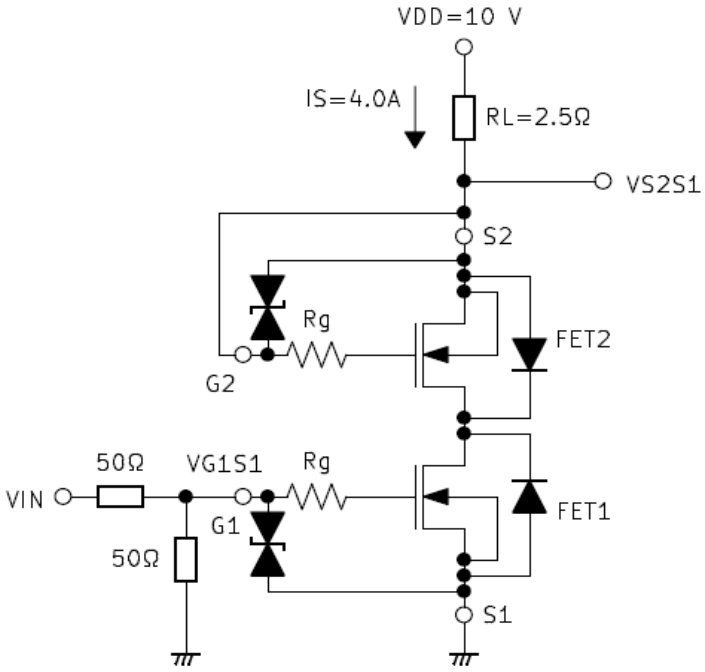
Electrical Characteristics (TJ=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Source-Source Breakdown Voltage	VSSS	IS=1mA, VGS=0V	12.0			V
Zero Gate Voltage Source Current	ISSS	VSS=12V, 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=6.0V, IS=1.0mA	0.4	0.9	1.4	V
Source-Source On-State Resistance	RSS(on)1 RSS(on)2 RSS(on)3 RSS(on)4	IS=4.0A, VGS=4.5V IS=4.0A, VGS=3.8V IS=4.0A, VGS=3.1V IS=4.0A, VGS=2.5V	3.0 3.2 3.5 3.8	4.0 4.3 4.8 5.9	5.1 5.5 6.8 10.0	mΩ
Body Diode Forward Voltage	VF(S-S)	IF=4.0A, 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		3,390 320 250		pF
Turn-On Delay Time *1 *2 Rise Time *1 *2	td(on) tr	VDD=10V, VGS=0 to 4.0V, IS=4.0A		3.0 3.6		μs
Turn-Off Delay Time *1 *2 Fall Time *1 *2	td(off) tf	VDD=10V, VGS=4.0 to 0V, IS=4.0A		5.0 6.3		μs
Total Gate Charge *1 Gate-Source Charge *1 Gate-Drain Charge *1	Qg Qgs Qgd	VDD=10V, VGS=0 to 4.0V, IS=4.0A		26.0 6.5 7.0		nC
Gate Resistance *1	Rg	f=1MHz		2,000		Ω

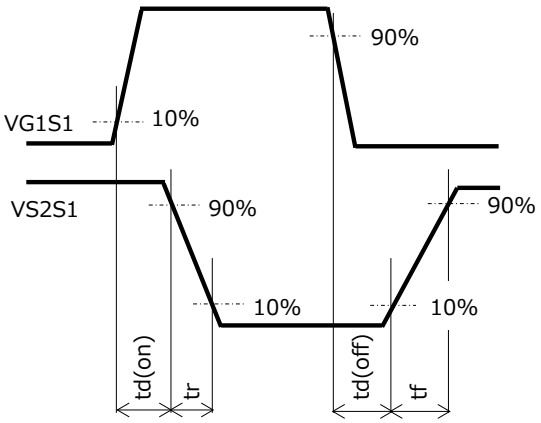
Note *1 Guaranteed by Design

Note *2 Measurement Circuit for Switching Characteristics

- FET1 Measurement Circuit for Switching Characteristics td(on), tr, td(off), tf
(FET2: Gate-Source Short)

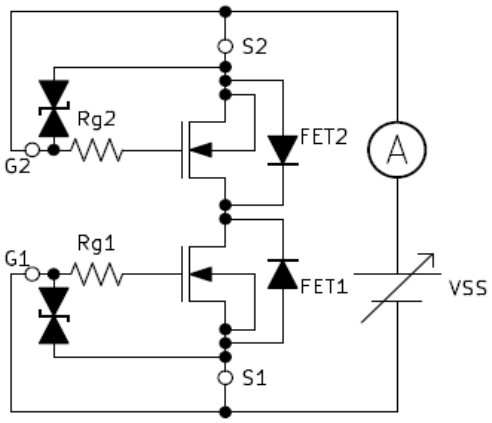


(Definition of Switching Measurement Detection)

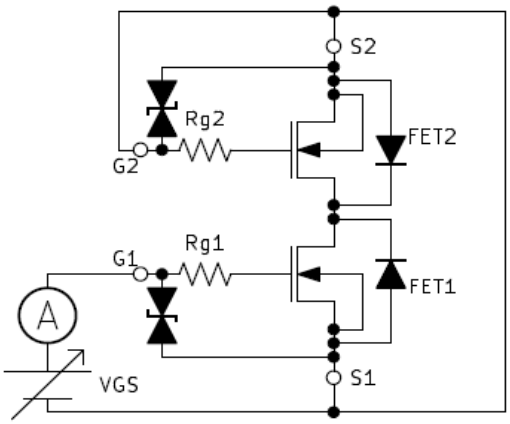


Test circuits for FET1

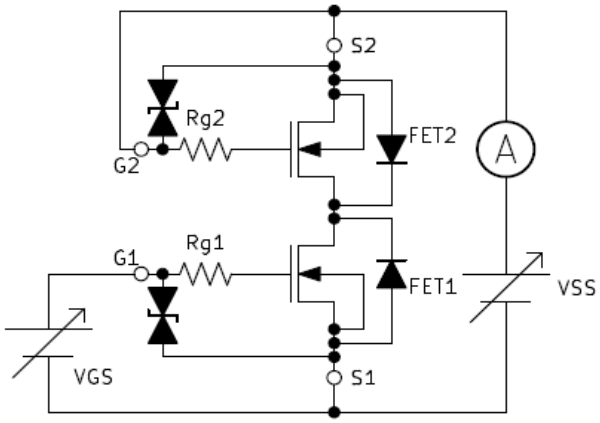
Test Circuit 1
VSSS/ISSS



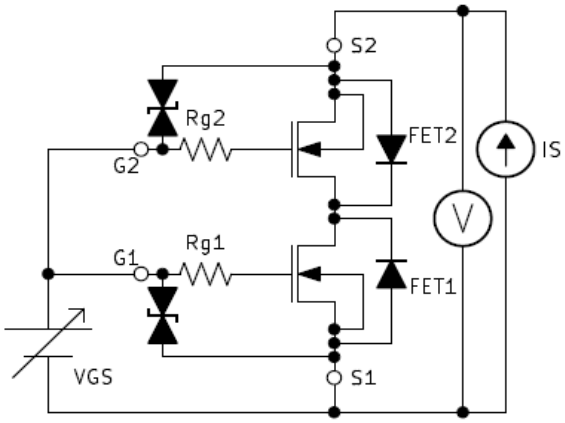
Test Circuit 2
IGSS1/2



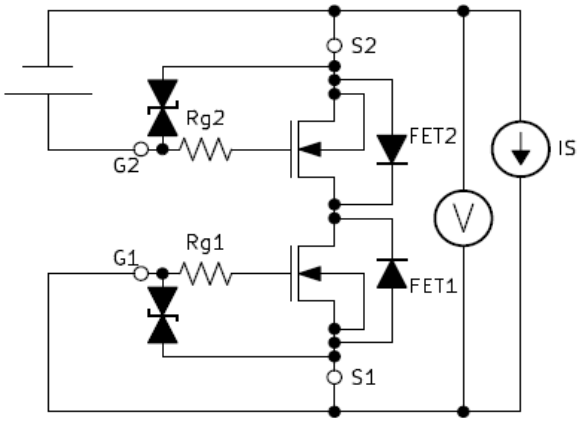
Test Circuit 3
Vth



Test Circuit 4
RSS(on)

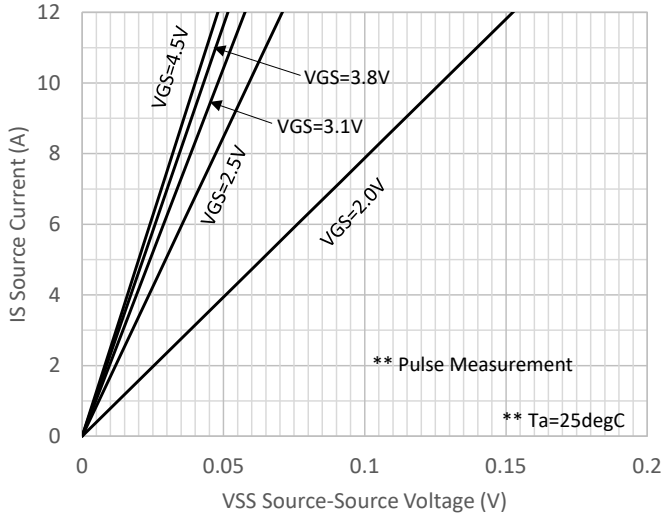


Test Circuit 5
VF(S-S)

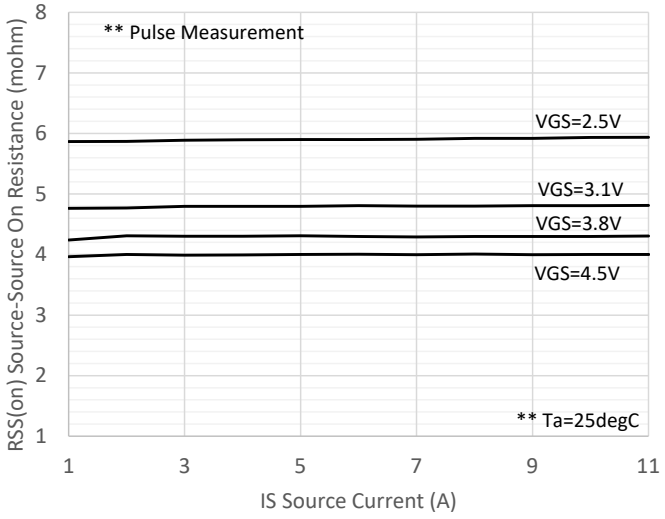


TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

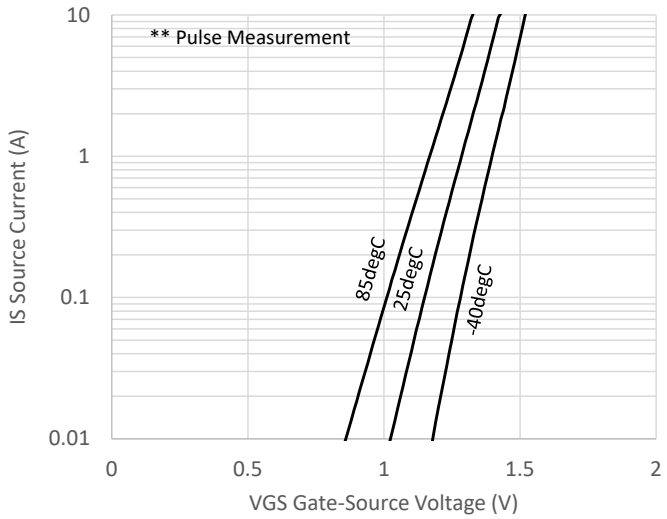
IS to VSS



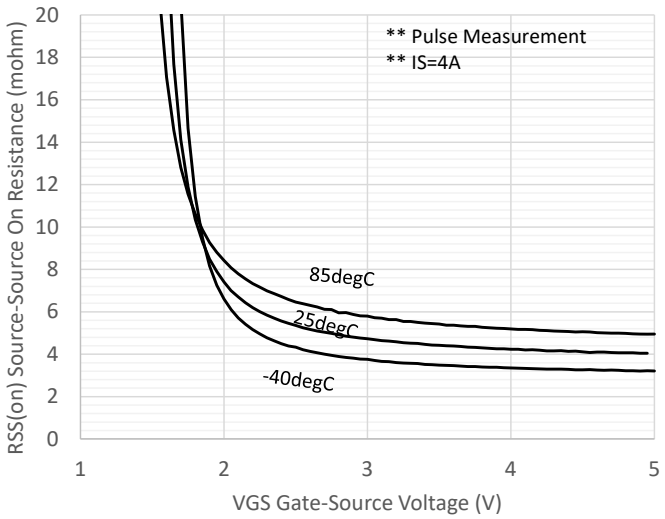
RSS(on) to IS



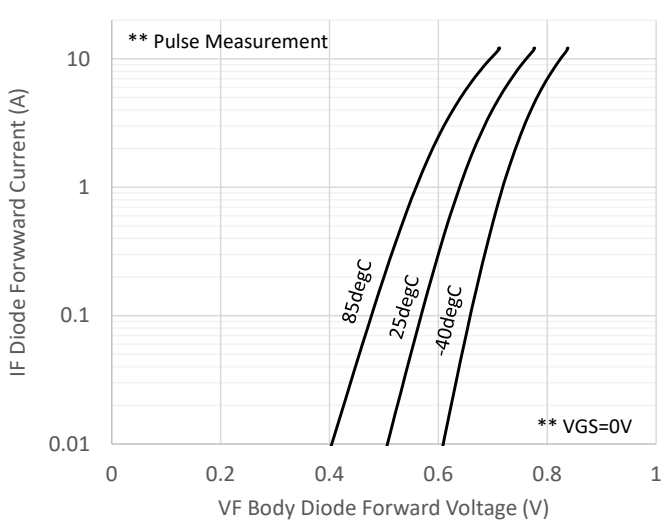
IS to VGS



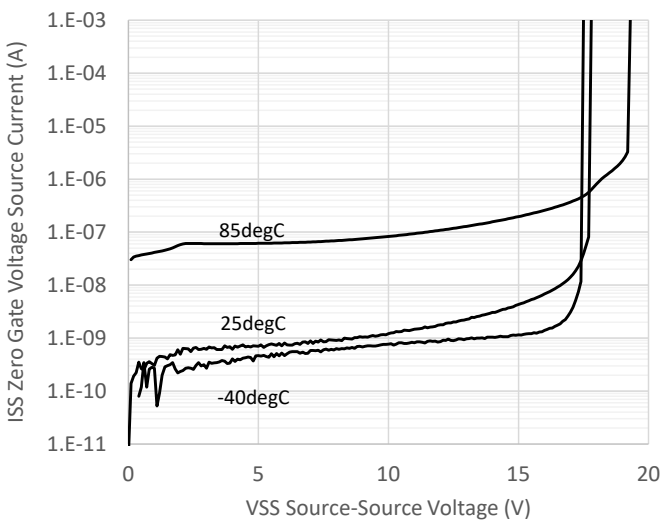
RSS(on) to VGS



IF to VF

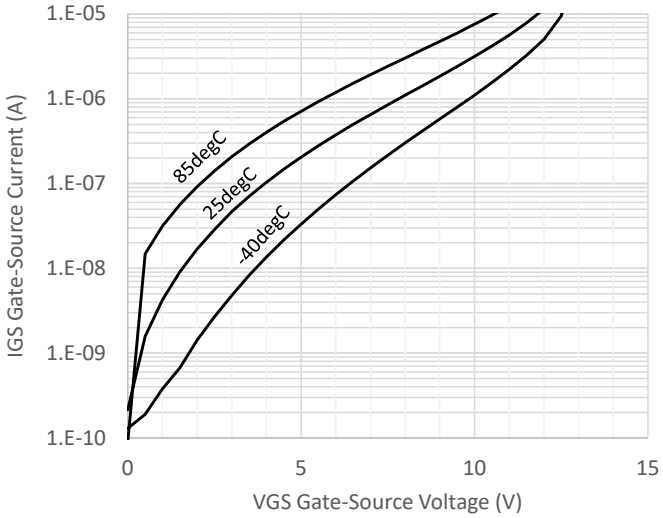


ISS to VSS

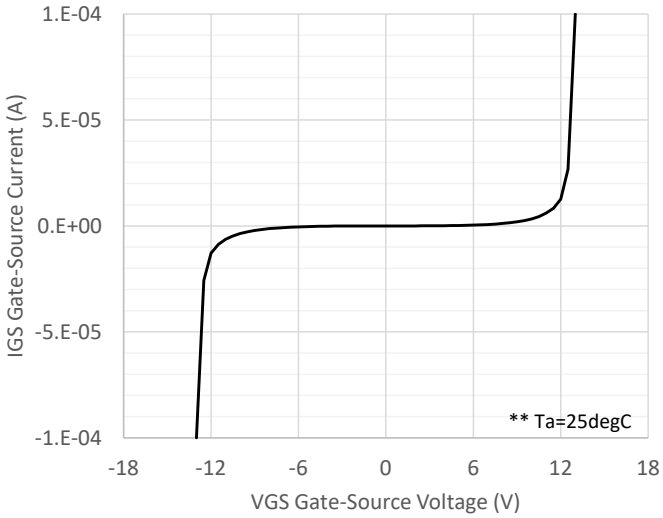


TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

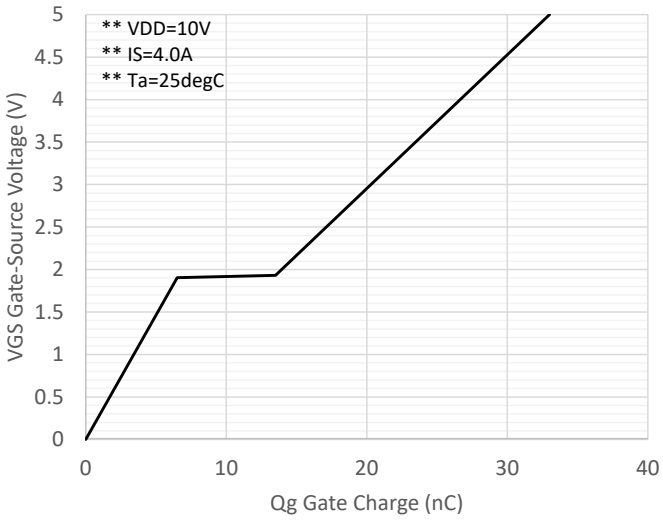
IGS to VGS



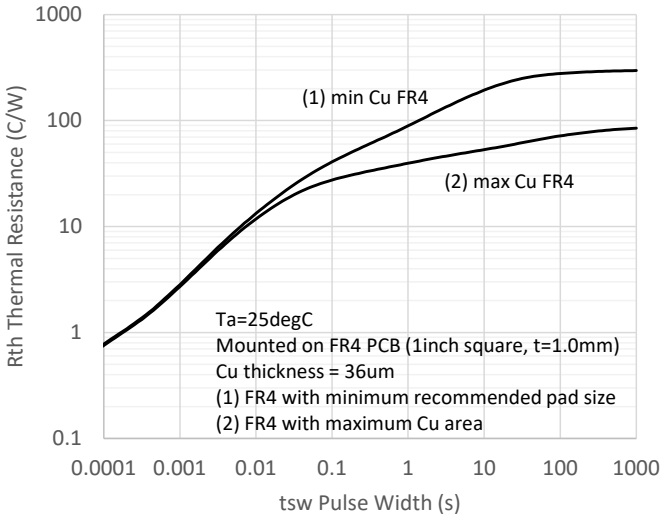
IGS to VGS



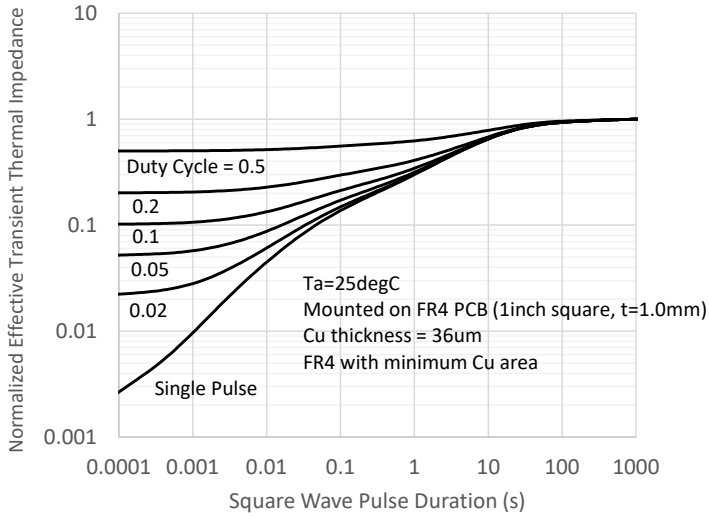
Dynamic Input / Output Characteristics



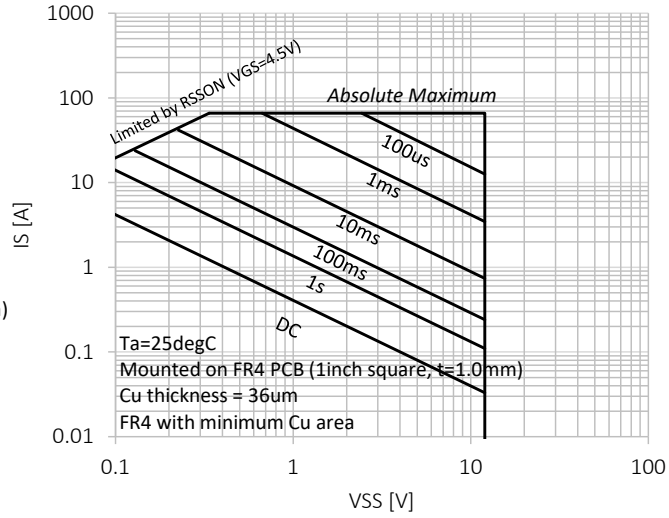
Rth to tsw



Thermal Response



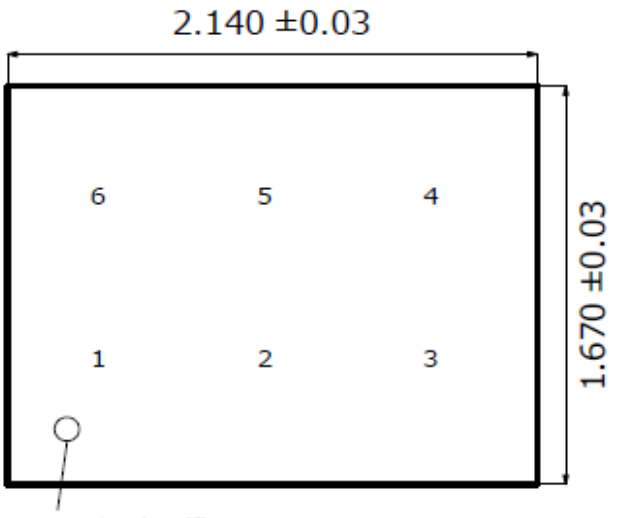
Safe Operating Area



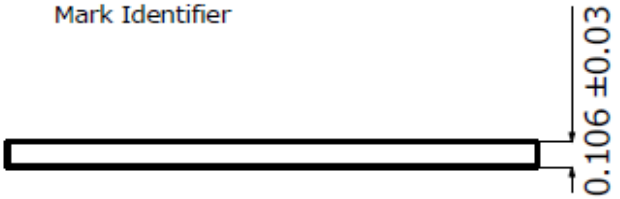
Outline Drawing CSP2.14*1.67-6L

Top View

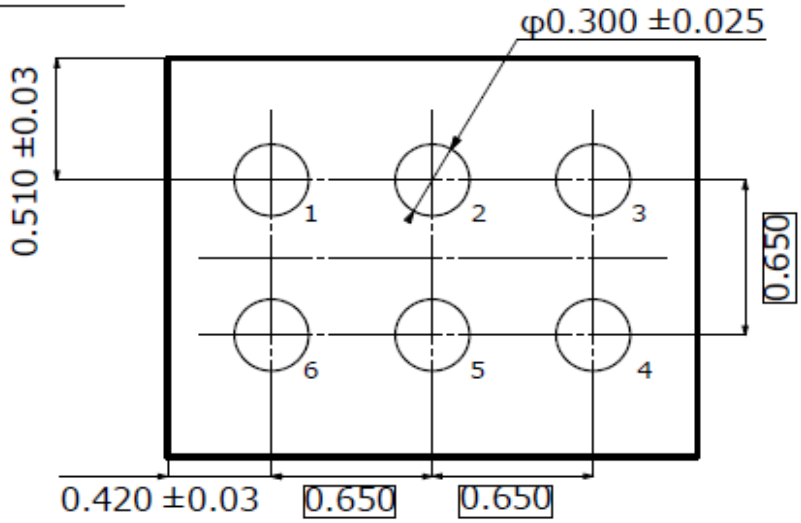
Unit: mm



Front View

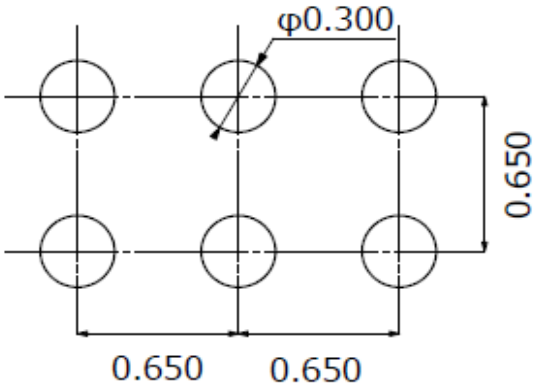


Bottom View



(Reference) Board Land & Stencil Mask Pattern

Unit: mm



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