GOSTONE

Dual N-channel Power MOSFET:
22V, 18mohm, 6.7A

GTD2204A

Product Summary			
VSSS	VGSS	RSS(ON) TYP/MAX	IS MAX
22V	± 12V	18.0/23.5 mΩ@VGS=4.5V 19.0/25.0 mΩ@VGS=3.8V 20.5/33.5 mΩ@VGS=3.1V 24.5/50.0 mΩ@VGS=2.5V	6.7A

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)

Application

- Lithium-Ion Secondary Battery Protection Circuits

Marking Symbol Code

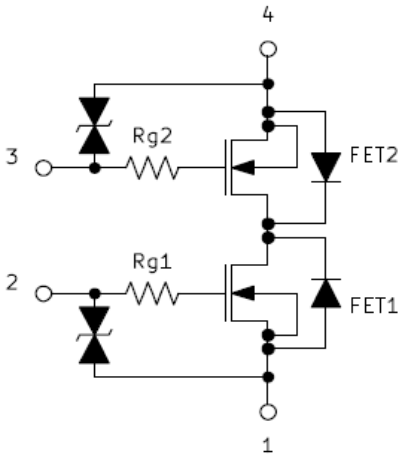
- Laser Marking Device Code: X

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

Form

- Tape & Reel Embossed Type: 5,000pcs / reel

Equivalent circuit

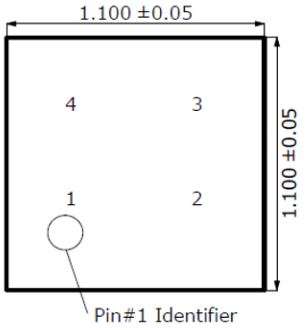


Absolute Maximum Rating Ta=25℃				
Parameter		Symbol	Rating	Unit
Source to Source Voltage		VSS	22	V
Gate to Source Voltage		VGS	±12	V
Source Current	DC	IS1 *1	4.1	A
	DC	IS2 *2	6.7	A
	Pulse	ISP *2*3	27	A
Total Dissipation	DC	PD1 *1	0.39	W
	DC	PD2 *2	1.14	W
Junction Temperature		Tj	150	℃
Storage Temperature		Tstg	-55 to +150	℃

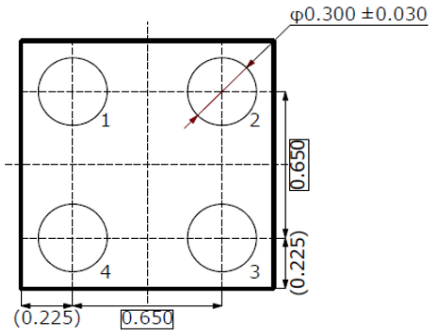
Thermal Characteristics Ta = 25℃			
Parameter	Symbol	Rating	Unit
Thermal Resistance	Rth *1	318	℃/W
	Rth *2	110	℃/W

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%

TOP View



Bottom View



1: Source1(FET1) 2: Gate1
4: Source2(FET2) 3: Gate2

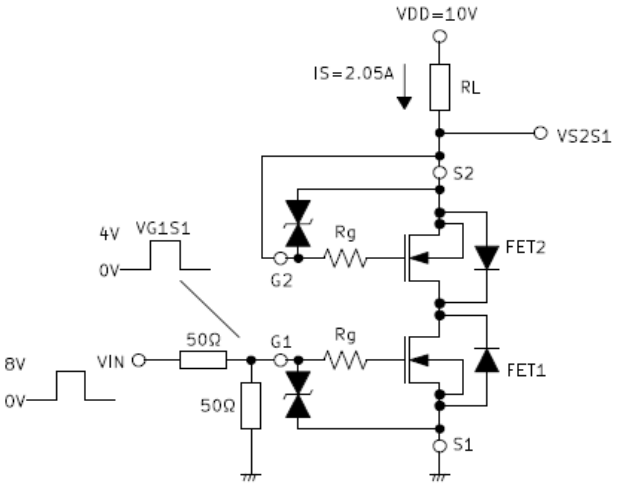
Electrical Characteristics (Ta=25degC +/- 3degC)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Source-Source Breakdown Voltage	VSSS	IS=1mA, VGS=0V	22			V
Zero Gate Voltage Source Current	ISSS	VSS=22V, VGS=0V			1.0	μA
Gate-Source Leakage Current	IGSS	VGS=±8V, VSS=0V			±10.0	μA
Gate-Source Threshold Voltage	Vth	VSS=10V, IS=1.0mA	0.35	0.9	1.4	V
Source-Source On-State Resistance	RSS(on)1	IS=2.05A, VGS=4.5V	12.0	18.0	23.5	mΩ
	RSS(on)2	IS=2.05A, VGS=3.8V	12.5	19.0	25.0	
	RSS(on)3	IS=2.05A, VGS=3.1V	13.0	20.5	33.5	
	RSS(on)4	IS=2.05A, VGS=2.5V	14.5	24.5	50.0	
Body Diode Forward Voltage	VF(S-S)	IF=2.05A, VGS=0V		0.7	1.0	V
Input Capacitance *1	Ciss	VSS=10V, VGS=0V, f=1kHz		486		pF
Output Capacitance *1	Coss			78		
Reverse Transfer Capacitance *1	Crss			64		
Turn-On Delay Time *1 *2	td(on)	VDD=10V, VGS=0 to 4.0V, IS=2.05A		13		μs
Rise Time *1 *2	tr			41		
Turn-Off Delay Time *1 *2	td(off)	VDD=10V, VGS=4.0 to 0V, IS=2.05A		128		μs
Fall Time *1 *2	tf			50		
Total Gate Charge *1	Qg	VDD=10V, VGS=0 to 4.0V, IS=4.1A		8.5		nC
Gate-Source Charge *1	Qgs			0.8		
Gate-Drain Charge *1	Qgd			2.8		
Gate Resistance *1	Rg	f=1MHz		32		Ω

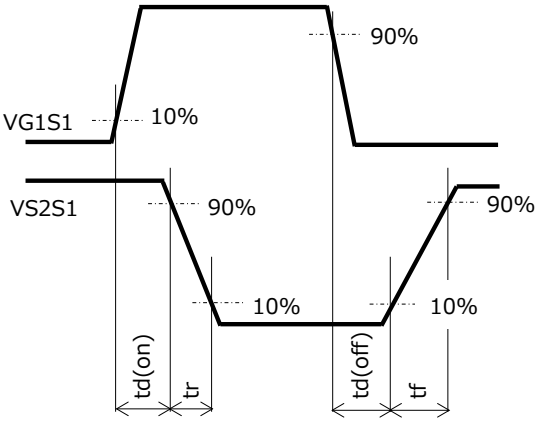
Note *1 Guaranteed by Design

Note *2 Measurement Circuit for Switching Characteristics

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

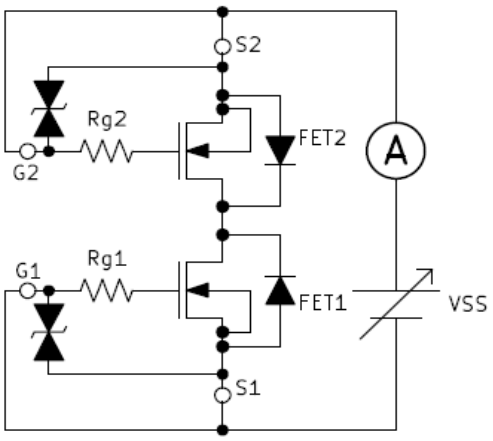


(Definition of Switching Measurement Detection)

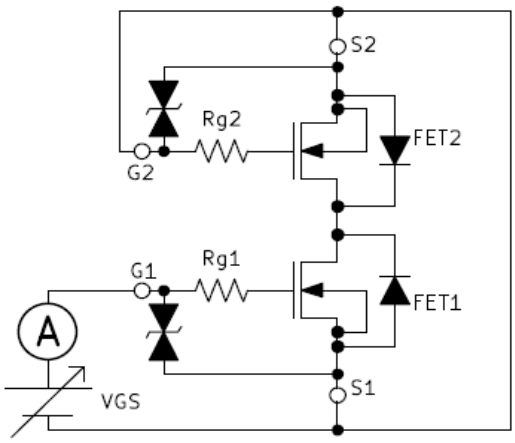


Test circuits for FET1

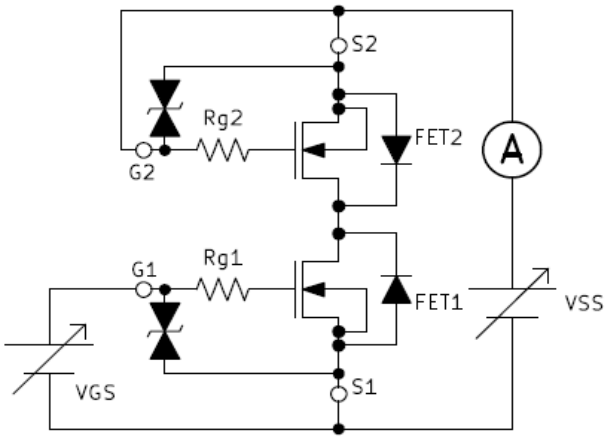
Test Circuit 1
VSSS/ISSS



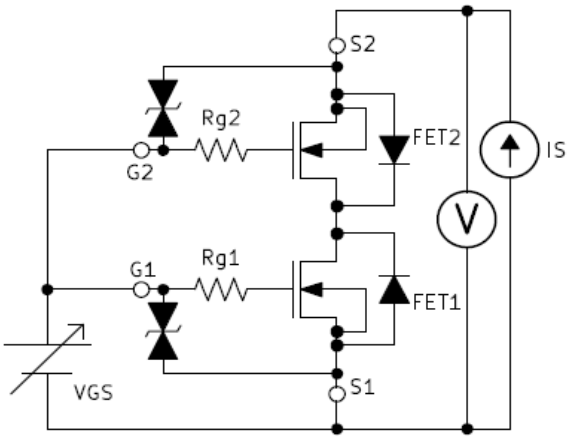
Test Circuit 2
IGSS1/2



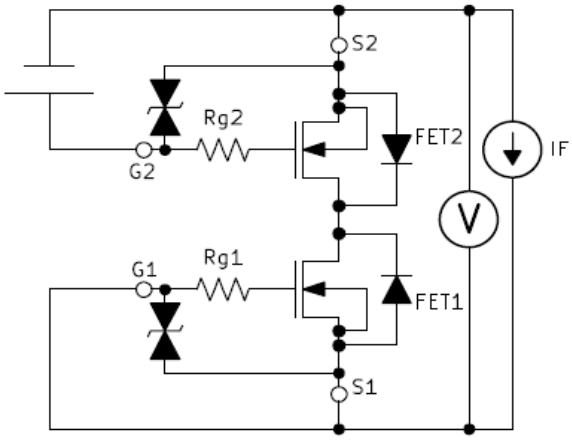
Test Circuit 3
Vth



Test Circuit 4
RSS(on)

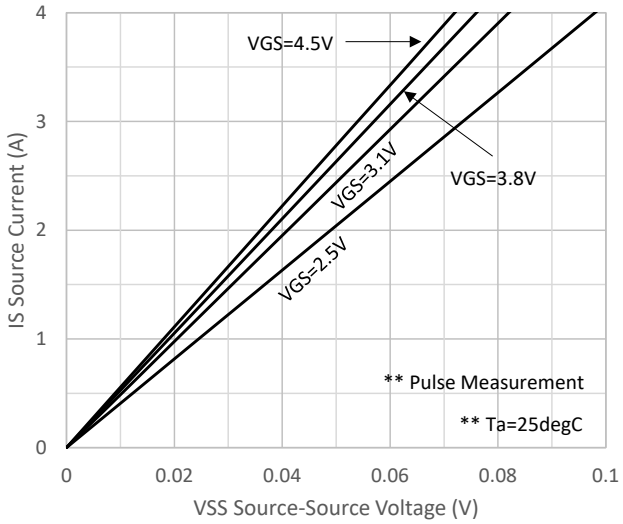


Test Circuit 5
VF(S-S)

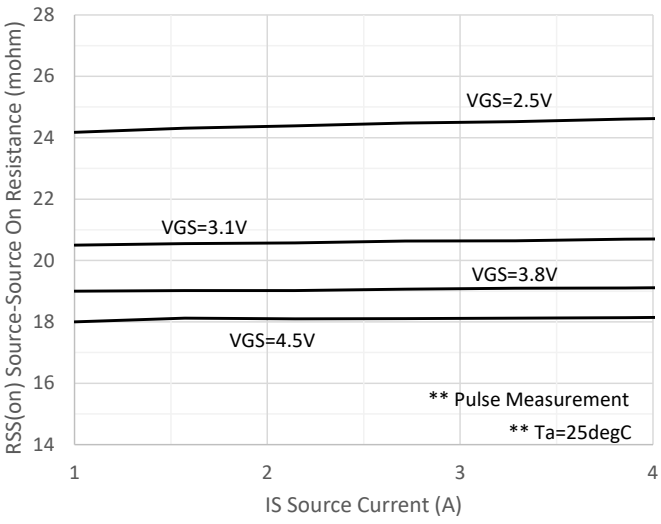


Technical data

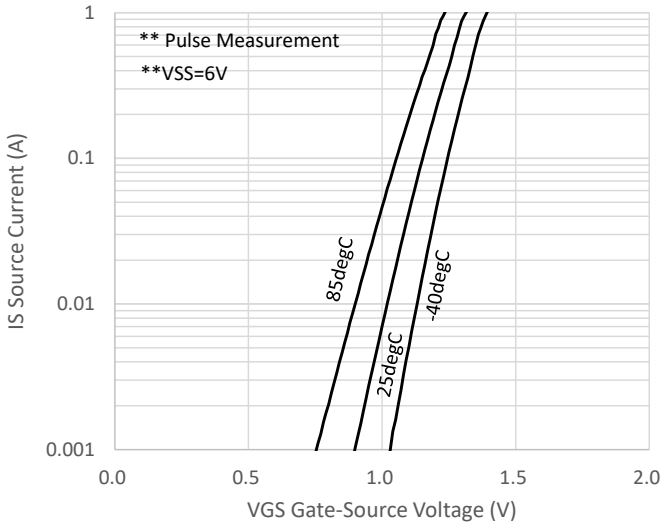
IS to VSS



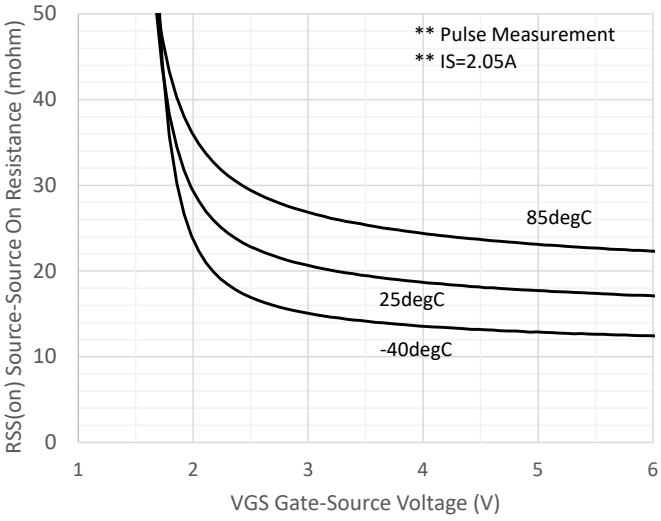
RSS(on) to IS



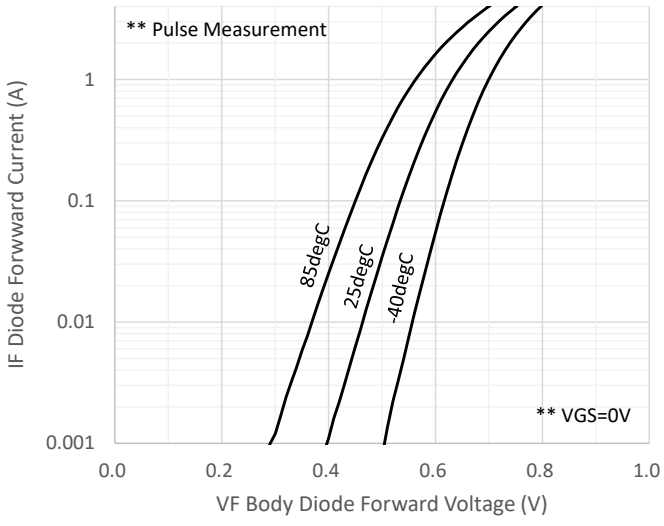
IS to VGS



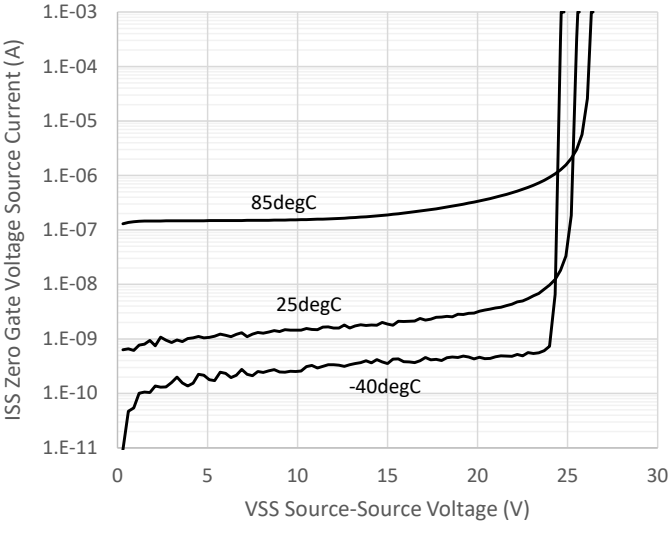
RSS(on) to VGS



IF to VF

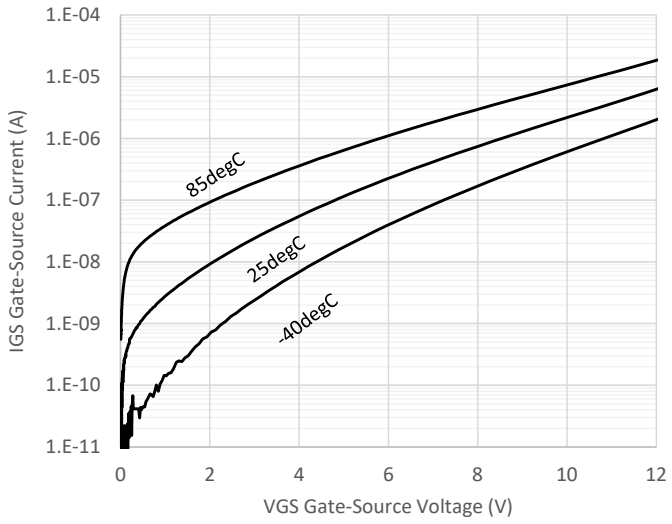


ISS to VSS

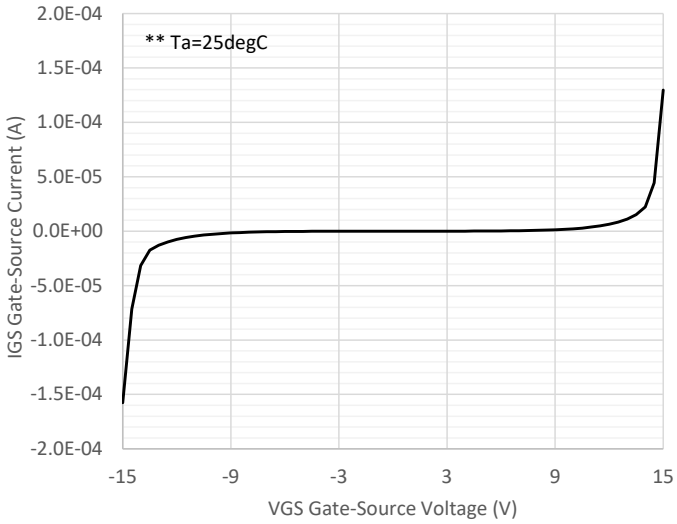


Technical data

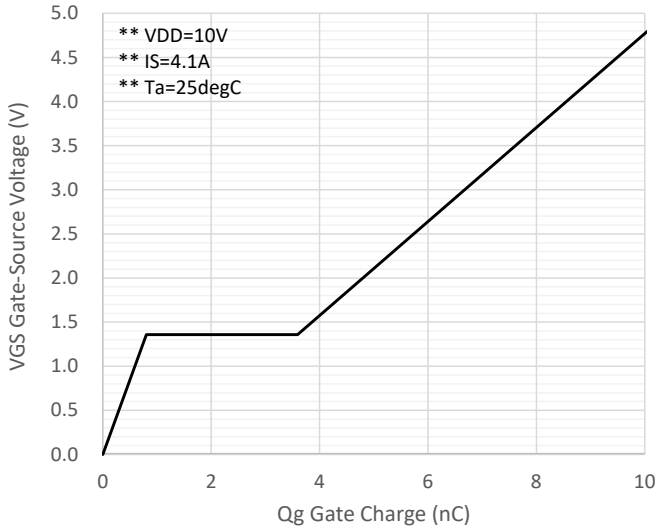
IGS to VGS



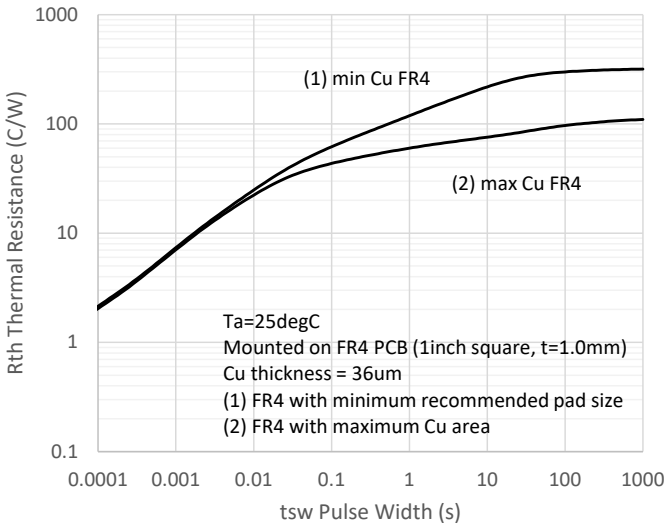
IGS to VGS



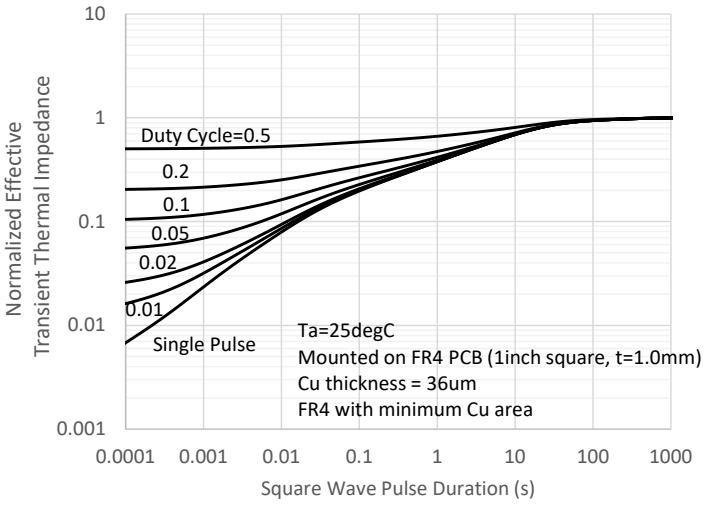
Dynamic Input / Output Characteristics



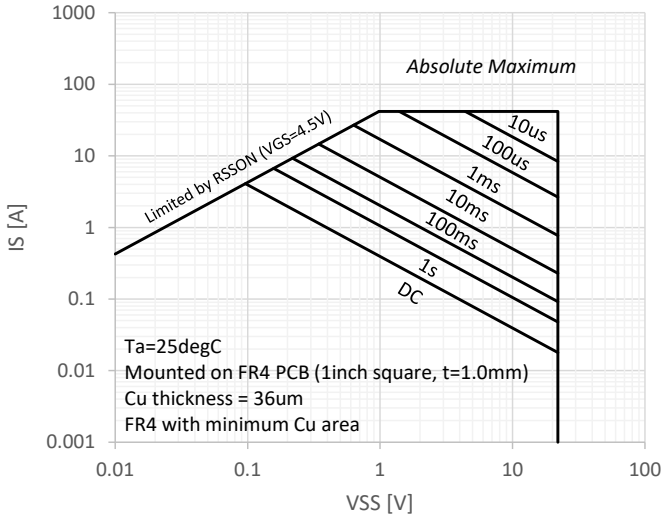
Rth to tsw



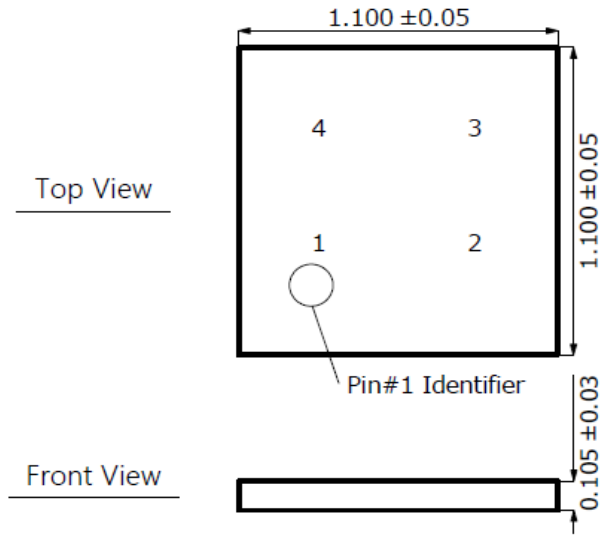
Thermal Response



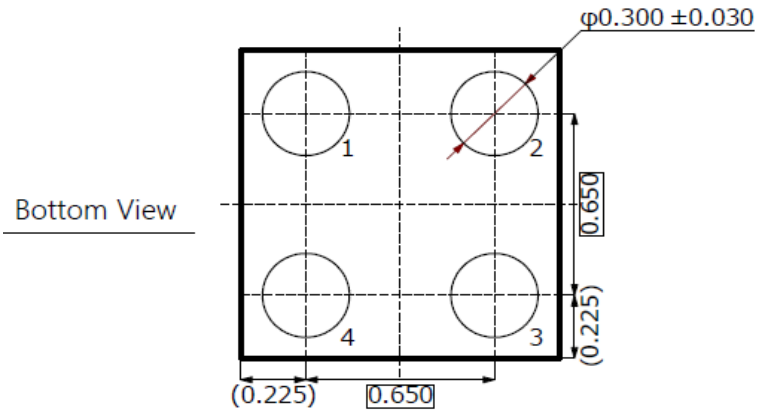
Safe Operating Area



Package Outline Dimensions

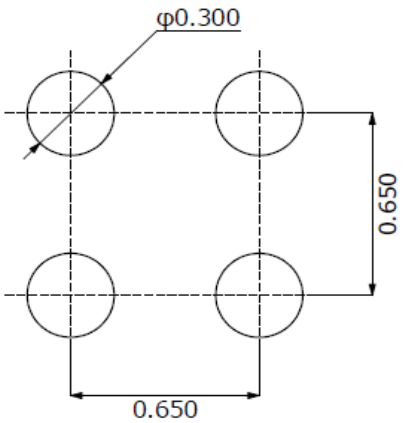


(Unit: mm)



(Reference) Board Land and Stencil Mask Pattern

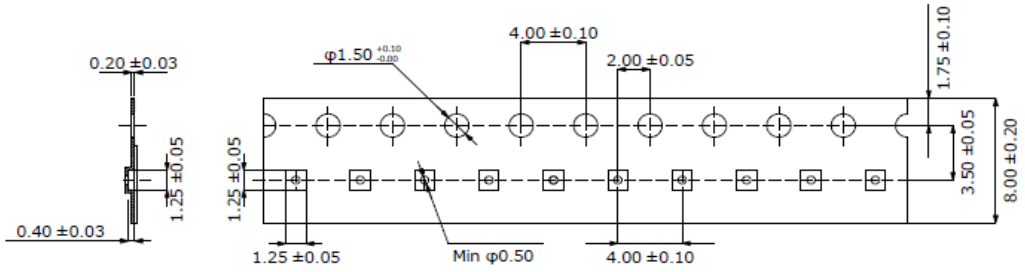
(Unit: mm)



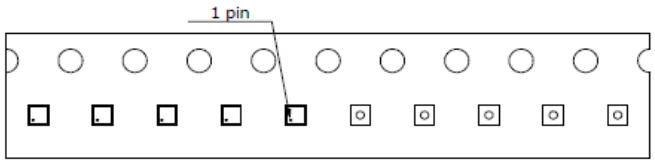
Form

- Tape & Reel Embossed Type: 5,000pcs / reel
- Factory PKG Code: WLCSP 1.1X1.1_4
- Tape Width: 8mm, Pitch: 4mm, Reel Size: 7inch

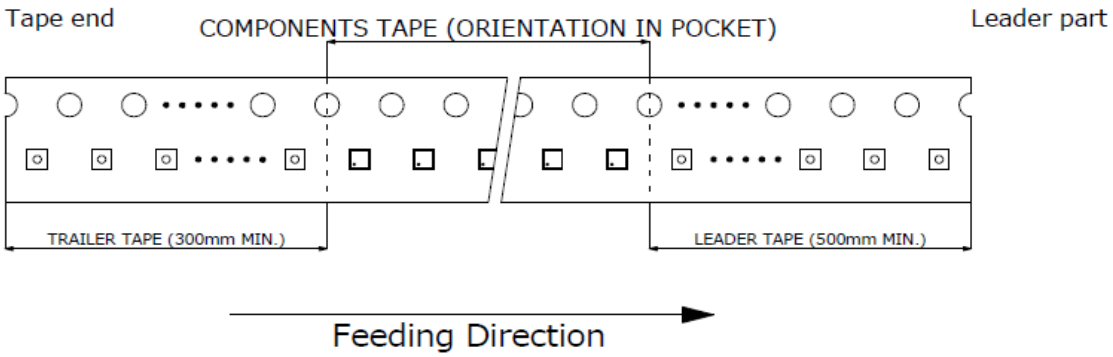
Tape size (mm)



Pin1 Direction



Tape end ~ Leader part (mm)



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