

Product Summary

VDSS	VGSS	RDS(ON) TYP/MAX	ID MAX
32V	± 20V	1.1/1.4 mΩ@VGS=10V 1.9/2.7 mΩ@VGS=4.5V	125A

Marking Symbol Code

- ❖ Laser Marking Device Code: AQ



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

Form

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

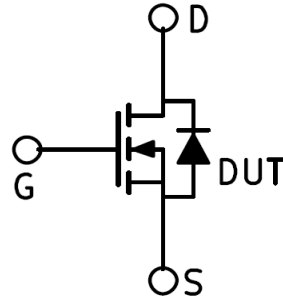
Features

- ❖ Low RDSon
- ❖ Optimized for Load Switch
- ❖ High Current Capacity
- ❖ Halogen-Free / RoHS Compliant

Application

- ❖ Battery Charging & Discharging for NB Battery Pack

Equivalent circuit



Absolute Maximum Rating Ta=25°C

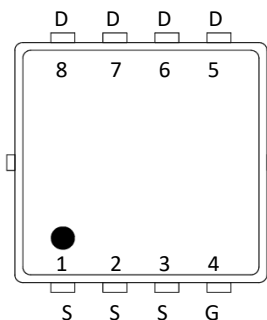
Parameter	Symbol	Rating	Unit
Drain to Source Voltage	VDS	32	V
Gate to Source Voltage	VGS	±20	V
Continuous Drain Current	ID	Tc=25°C	125 A
		Tc=100°C	79 A
Pulsed Drain Current*1	IDM	250	A
Continuous Drain Current	ID	TA=25°C	35 A
		TA=70°C	28 A
Avalanche Current	IAS	50	A
Avalanche Energy	L=0.1mH	EAS	125 mJ
Power Dissipation	PD	Tc=25°C	45 W
		Tc=100°C	18 W
Power Dissipation*3	PD	TA=25°C	5.0 W
		TA=70°C	3.2 W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55 to +150	°C

*1 Pulse width limited by maximum junction temperature.

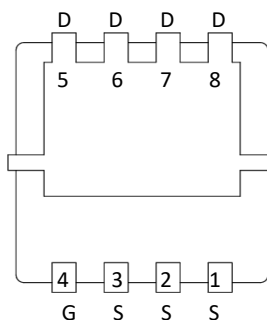
*2 The value of RθJA is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with TA=25°C.

*3 The Power dissipation is based on RθJA t ≤ 10s value.

Top View



Bottom View



1,2,3: Source
4: Gate
5,6,7,8: Drain

Thermal Characteristics (Typical)

Parameter	Symbol	Typ	Unit
Maximum Junction-to Ambient (T _A =25°C)			
t ≤ 10s	R _{thJA} *2	20	°C/W
Steady-State		52	°C/W
Maximum Junction-to Case (T _c =25°C)			
Steady-State	R _{thJC}	2.2	°C/W

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

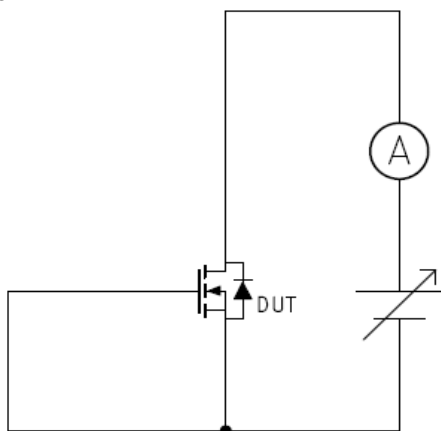
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VDSS	ID=250μA, VGS=0V	32			V
Zero Gate Voltage Drain Current	IDSS	VDS=32V, VGS=0V			1	μA
Gate-Source Leakage Current	IGSS	VGS=±20V, VDS=0V			±100	nA
Gate-Source Threshold Voltage	Vth	VDS=VGS, ID=250μA	1.2	1.7	2.2	V
Drain-Source On-State Resistance	RDS(on)1	ID=20A, VGS=10V		1.1	1.4	mΩ
	RDS(on)2	ID=20A, VGS=4.5V		1.9	2.7	
Forward Transconductance	gFS	VGS=5V, ID=20A		130		S
Diode Forward Voltage	VSD	IS=1A, VGS=0V		0.68	1	V
Maximum Body Diode Continuous Current	IS				50	A
Input Capacitance *1	Ciss	VDS=16V, VGS=0V, f=1MHz		4,400		pF
Output Capacitance *1	Coss			2,250		
Reverse Transfer Capacitance *1	Crss			162		
Gate Resistance *1	Rg	f=1MHz		9.5		Ω
Turn-On Delay Time *1 *2	td(on)	VDD=16V, VGS=10.0V, ID=20A, Rg=3Ω		12		ns
Rise Time *1 *2	tr			100		
Turn-Off Delay Time *1 *2	td(off)	VDD=16V, VGS=10.0V, ID=20A, Rg=3Ω		120		ns
Fall Time *1 *2	tf			90		
Total Gate Charge *1	Qg	VDD=16V, VGS=10.0V, ID=20A		81		nC
Gate-Source Charge *1	Qgs			14		
Gate-Drain Charge *1	Qgd			20		
Body Diode Reverse Recovery Time	trr	IF=20A, di/dt=500A/μs		51		ns
Body Diode Reverse Recovery Charge	Qrr	IF=20A, di/dt=500A/μs		92		nC

Note *1 Guaranteed by Design

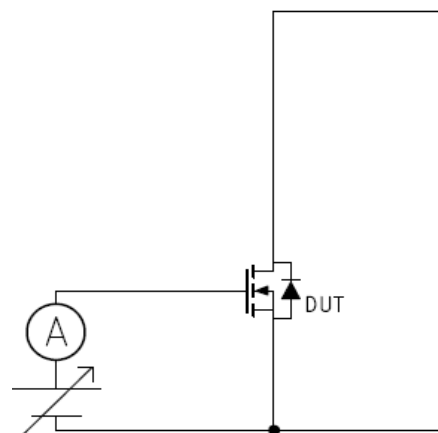
Note *2 Measurement Circuit for Switching Characteristics

Test circuits

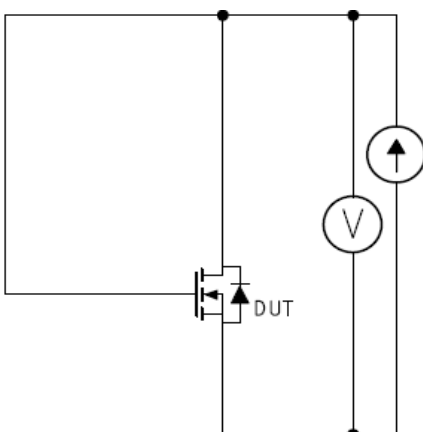
Test Circuit 1
VDSS/IDSS



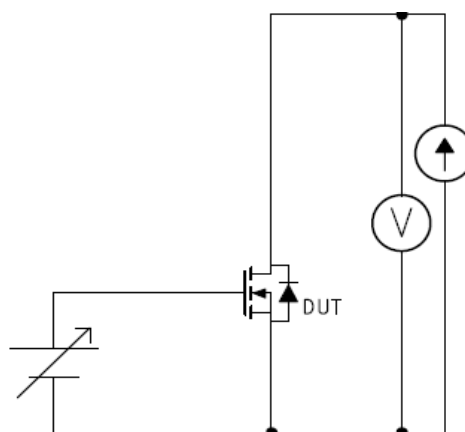
Test Circuit 2
IGSS



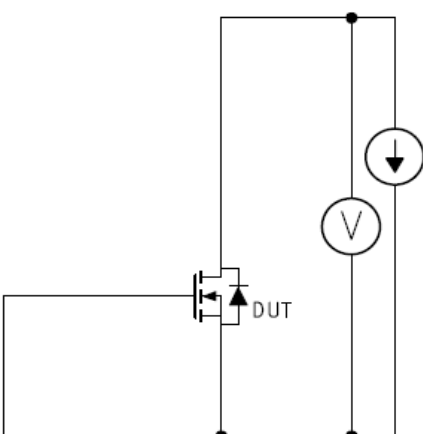
Test Circuit 3
Vth



Test Circuit 4
RDS(on)

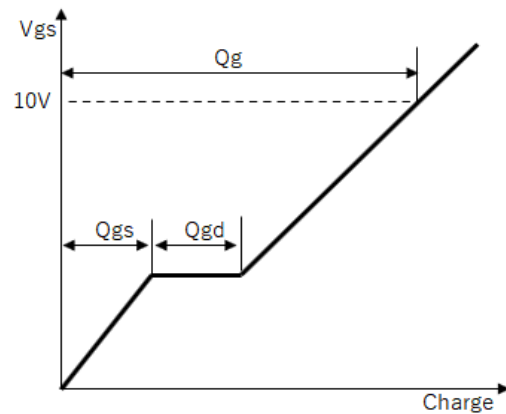
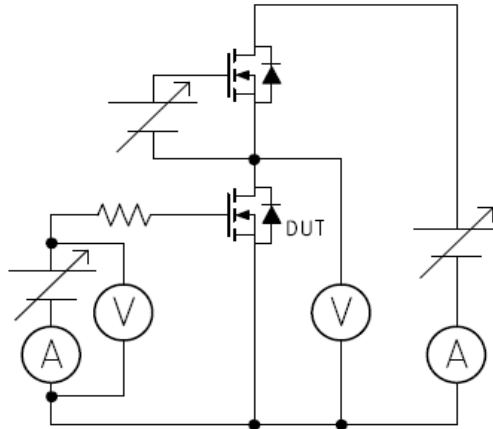


Test Circuit 5
VF

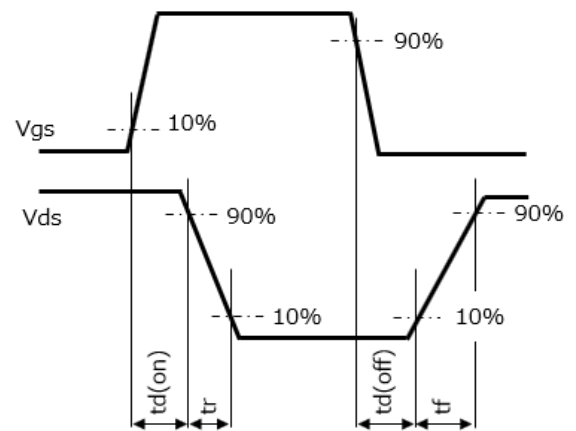
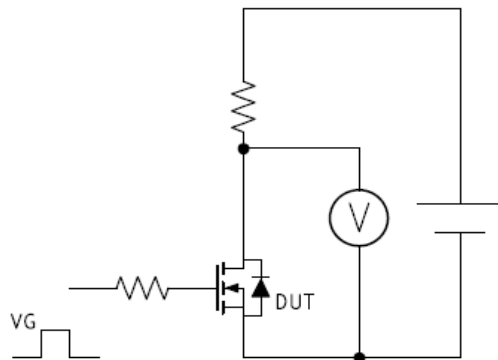


Test circuits

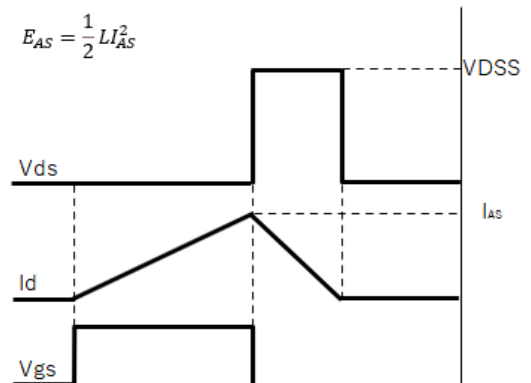
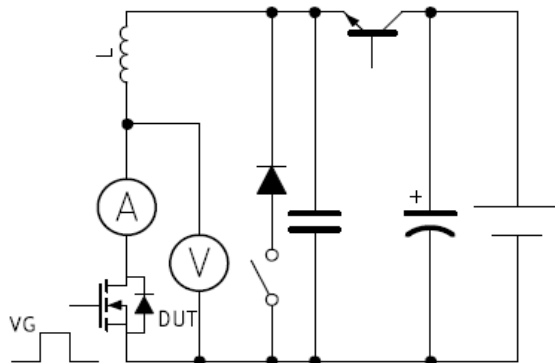
Test Circuit 6
Qg



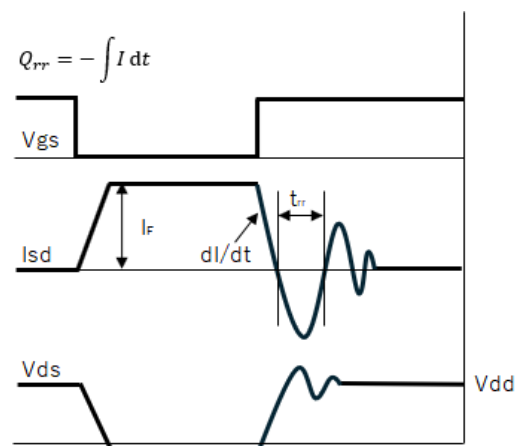
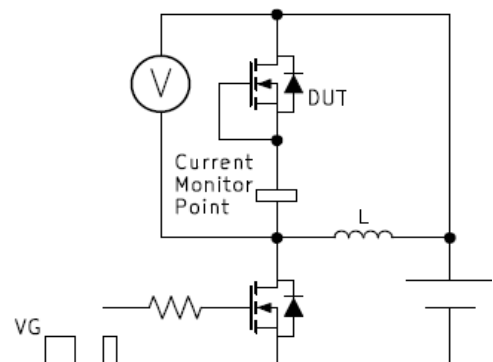
Test Circuit 7
Switching Time



Test Circuit 8
IAS

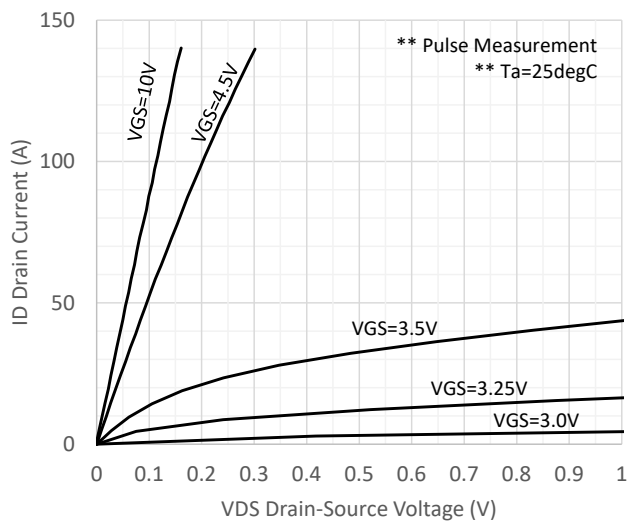


Test Circuit 9
trr/Qrr

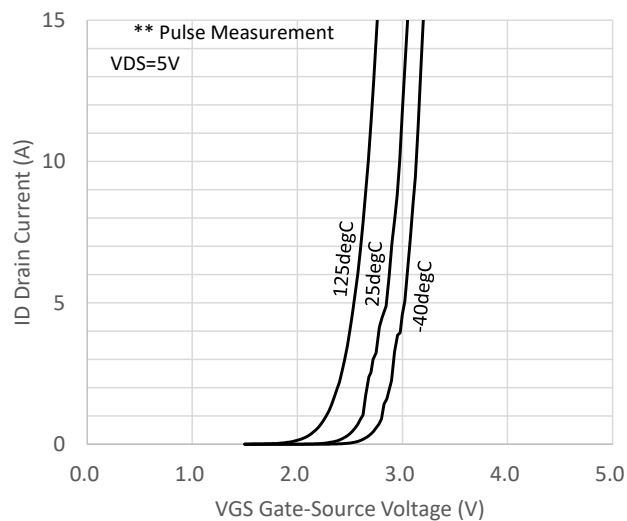


Technical data

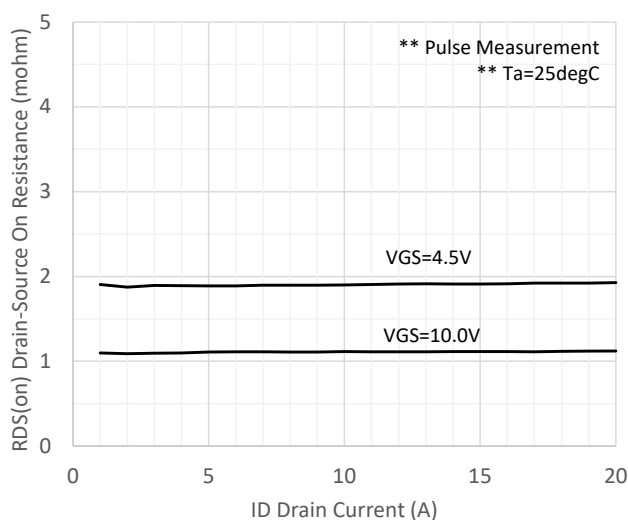
ID to VDS



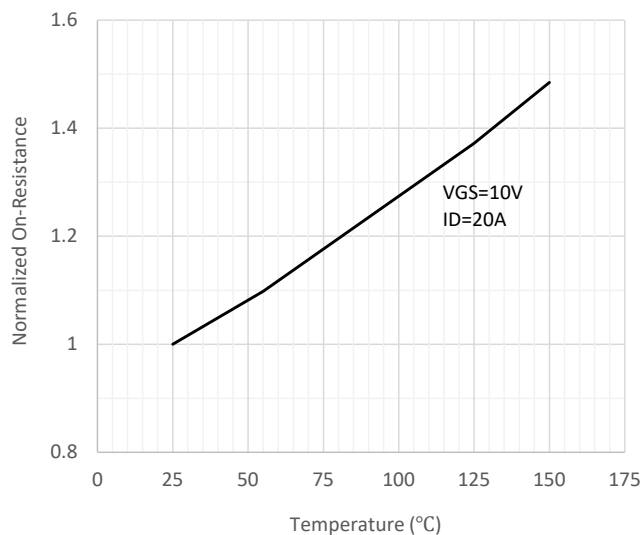
ID to VGS



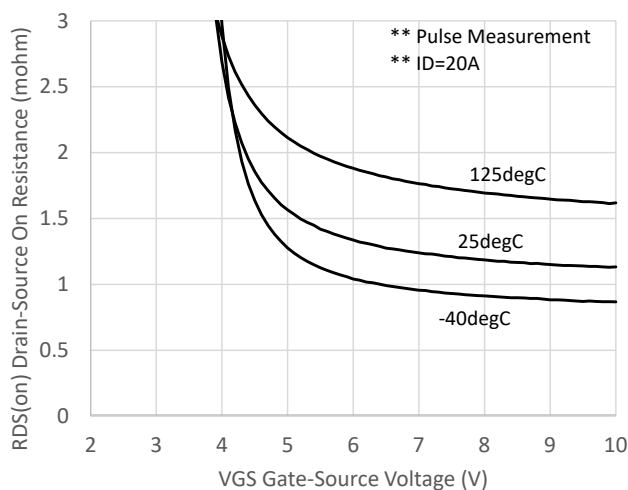
RDS(on) to ID



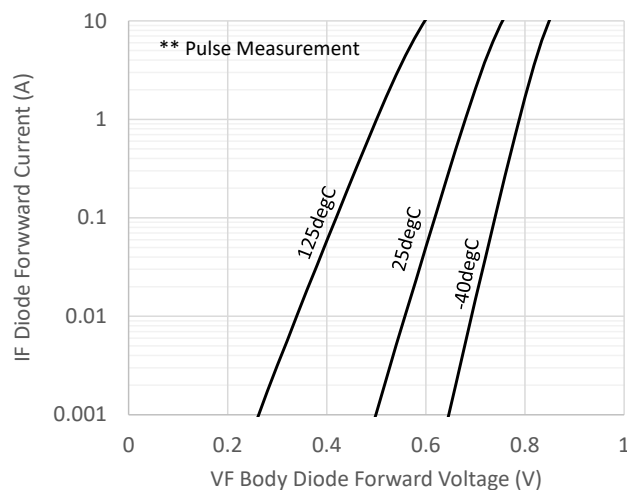
On-Resistance vs Junction Temperature



RDS(on) to VGS

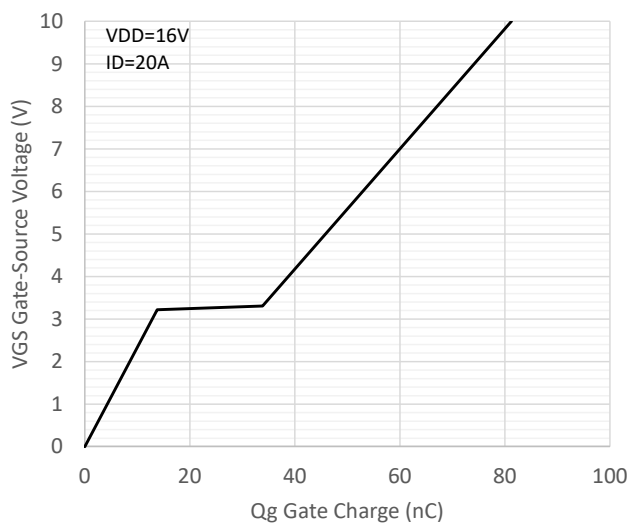


IF to VF

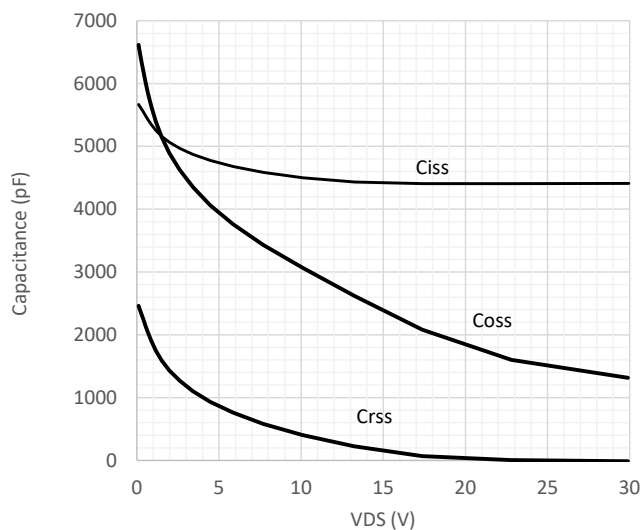


Technical data

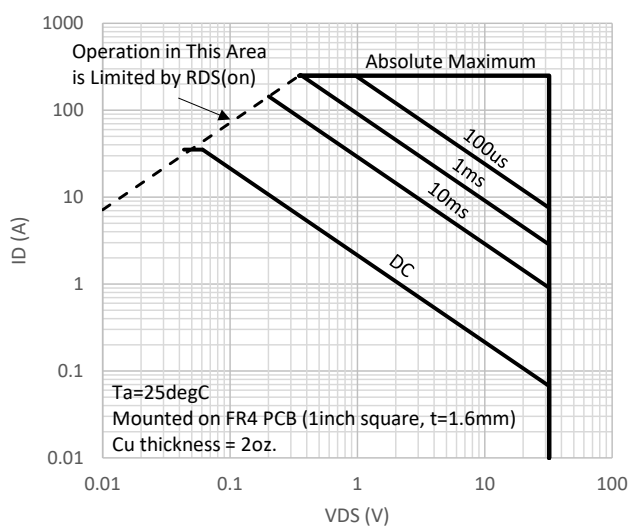
Gate-Charge Characteristics



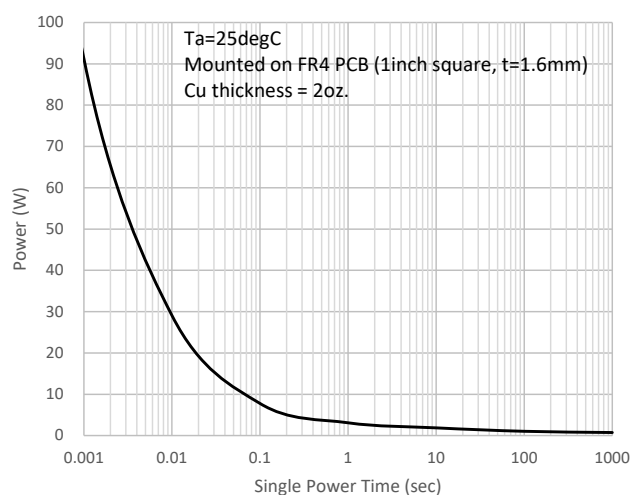
Capacitance Characteristic



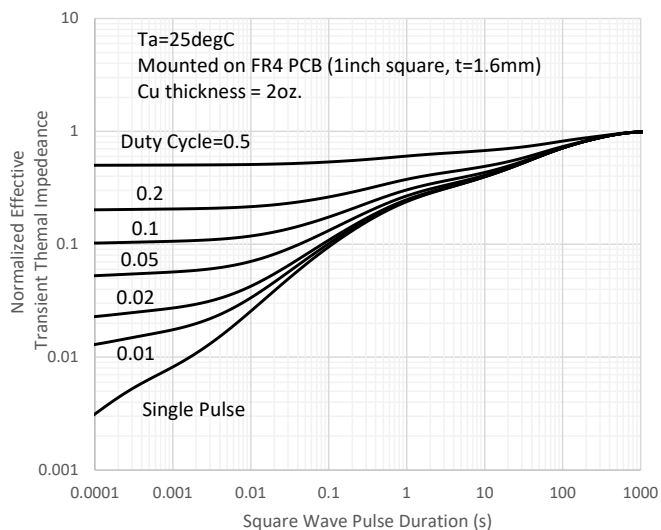
SOA



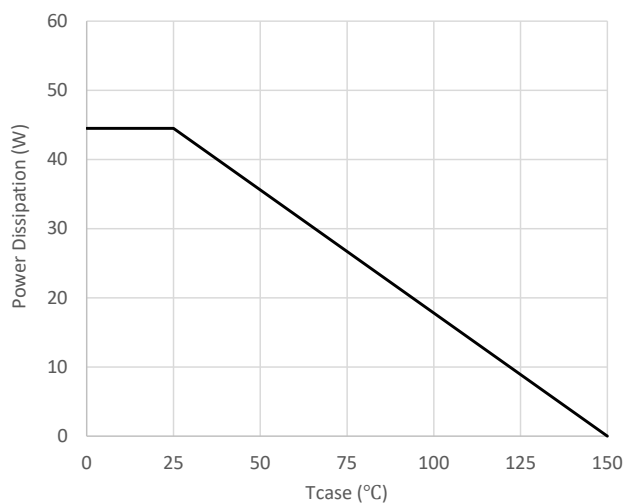
Single Pulse Maximum Power Dissipation

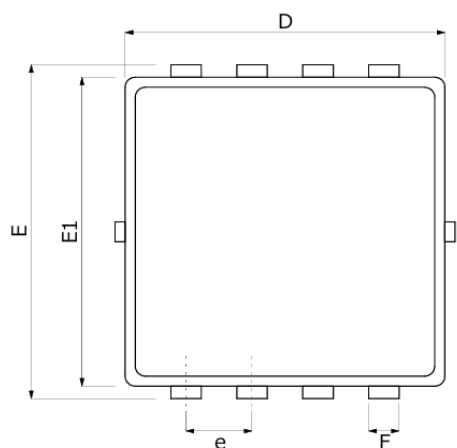
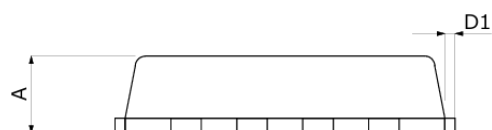
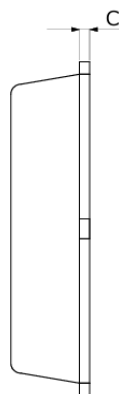
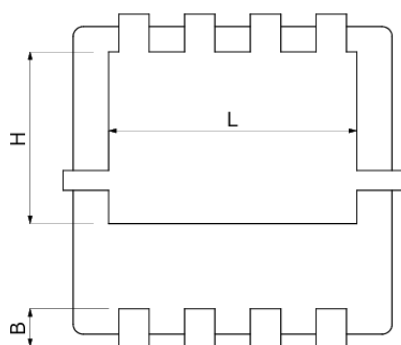


Thermal Response



Power Derating



Package Outline Dimensions
Top View

Side View

Bottom View


Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.725	0.775	0.825
B	0.280	0.380	0.480
C	0.130	0.150	0.200
D	3.050	3.150	3.250
D1	-	-	0.100
E	3.250	3.350	3.450
E1	3.000	3.100	3.200
e	0.600	0.650	0.700
F	0.250	0.300	0.350
H	1.630	1.730	1.830
L	2.350	2.450	2.550

- ❖ Tape & Reel Embossed Type: 5,000pcs / reel
- ❖ Factory PKG Code: DFN
- ❖ Tape Width: 12mm, Pitch: 8mm, Reel Size: 330mm

The diagram illustrates a tape assembly with the following components and labels:

- Tape end**: Located at the left edge of the assembly.
- COMPONENTS TAPE (ORIENTATION IN POCKET)**: The central section of the tape, shown with two segments separated by a diagonal break. It contains circular holes and square pockets, some of which contain smaller circles.
- Leader part**: Located at the right edge of the assembly.
- TRAILER TAPE (300mm MIN.)**: The section of the tape to the left of the components tape.
- LEADER TAPE (500mm MIN.)**: The section of the tape to the right of the components tape.
- Feeding Direction**: Indicated by a large arrow pointing to the right at the bottom of the diagram.

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