GOSTONE

N-channel Power MOSFET:
30V, 6.6mohm, 31A, PDFN5x6

GN340A

Product Summary			
VDSS	VGSS	RDS(ON) TYP/MAX	ID MAX
30V	± 20V	6.6/9.0 mΩ@VGS=10V 9.8/16.5 mΩ@VGS=4.5V	**31A**

Features

- Low RDSon
- Low Gate Charge
- High Current Capacity
- Halogen-Free / RoHS Compliant

Application

- Battery Charging & Discharging for NB Battery Pack
- DC/DC Converters in Computing.

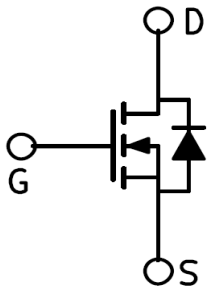
Marking Symbol Code

- Laser Marking Device Code: AN



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

Equivalent circuit



Form

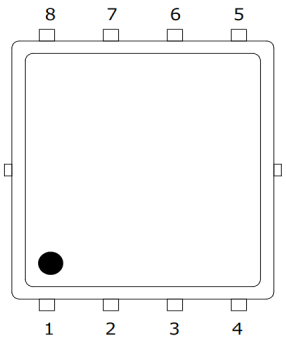
- Tape & Reel Embossed Type: 5,000pcs / reel

Absolute Maximum Rating Ta=25℃				
Parameter		Symbol	Rating	Unit
Drain to Source Voltage		VDS	30	V
Gate to Source Voltage		VGS	±20	V
Continuous Drain Current	Tc=25°C	IDM	31	A
	Tc=100°C		19	A
Pulsed Drain Current[*1]		IDM	62	A
Continuous Drain Current	T_A=25°C	IDSM	11	A
	T_A=70°C		9	A
Avalanche Current		IAS	14	A
Avalanche Energy	L=0.1mH	EAS	9.8	mJ
Power Dissipation	Tc=25°C	PD	16	W
	Tc=100°C		6	W
Power Dissipation[*3]	T_A=25°C	PDSM	4.3	W
	T_A=70°C		2.8	W
Junction Temperature		Tj	150	℃
Storage Temperature		Tstg	-55 to +150	℃

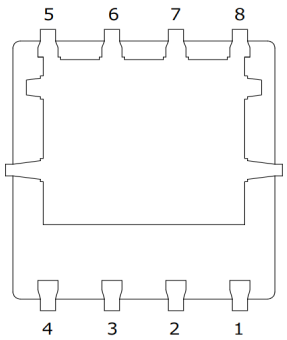
Thermal Characteristics (Typical)				
Parameter		Symbol	TYP	Unit
Junction-to Ambient (T_A=25°C)				
	t ≤ 10s	R_{thJA}[*2]	23.0	℃/W
	Steady-State		55.3	℃/W
Junction-to Case (Tc=25°C)				
	Steady-State	R_{thJC}	6.2	℃/W

[*1]Pulse width limited by maximum junction temperature.
[*2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.
[*3]The Power dissipation is based on $R_{\theta JA}$ t ≤ 10s value.

Top View



Bottom View



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

Electrical Characteristics (Tj=25degC)

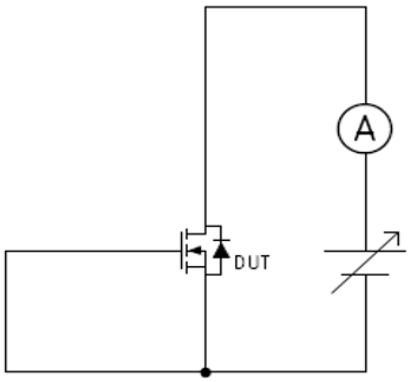
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VDSS	ID=250μA, VGS=0V	30			V
Zero Gate Voltage Drain Current	IDSS	VDS=24V, VGS=0V			1	μA
Gate-Source Leakage Current	IGSS	VGS=±20V, VDS=0V			±100	nA
Gate-Source Threshold Voltage	Vth	VDS=VGS, ID=250μA	1.20	1.60	2.40	V
Drain-Source On-State Resistance	RDS(on)1 RDS(on)2	ID=9.5A, VGS=10V ID=9A, VGS=4.5V		6.6 9.8	9.0 16.5	mΩ
Forward Transconductance	gFS	VGS=5V, ID=9.5A		45		S
Input Capacitance *1 Output Capacitance *1 Reverse Transfer Capacitance *1	Ciss Coss Crss	VDS=15V, VGS=0V, f=1MHz		522 340 21		pF
Gate Resistance *1	Rg	f=1MHz		1.6		Ω
Turn-On Delay Time *1 *2 Rise Time *1 *2	td(on) tr	VDD=15V, VGS=10V, ID=9.5A		5.2 4.8		ns
Turn-Off Delay Time *1 *2 Fall Time *1 *2	td(off) tf	VDD=15V, VGS=10V, ID=9.5A		16.0 9.2		ns
Total Gate Charge *1 Gate-Source Charge *1 Gate-Drain Charge *1	Qg Qgs Qgd	VDD=15V, VGS=10V, ID=9.5A		10.1 1.5 2.6		nC
Diode Forward Voltage	VSD	IS=9.5A, VGS=0V			1.1	V
Maximum Body Diode Continuous Current	IS				14	A
Body Diode Reverse Recovery Time *1 Body Diode Reverse Recovery Charge *1	trr Qrr	IF=9.5A, di/dt=100A/μs		22.0 8.6		ns nC

Note *1 Guaranteed by Design

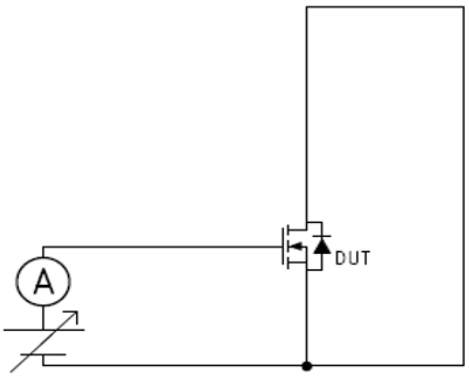
Note *2 Measurement Circuit for Switching Characteristics

Test circuits

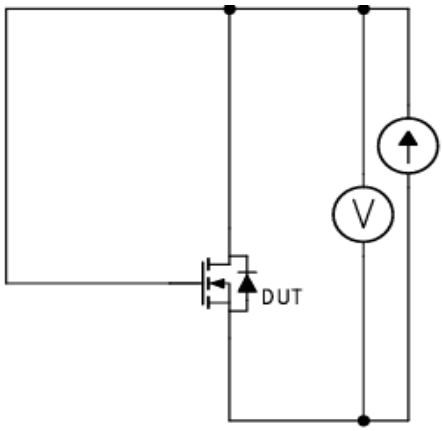
Test Circuit 1
VDSS/IDSS



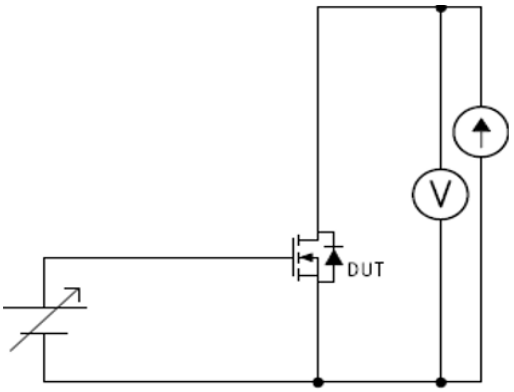
Test Circuit 2
IGSS



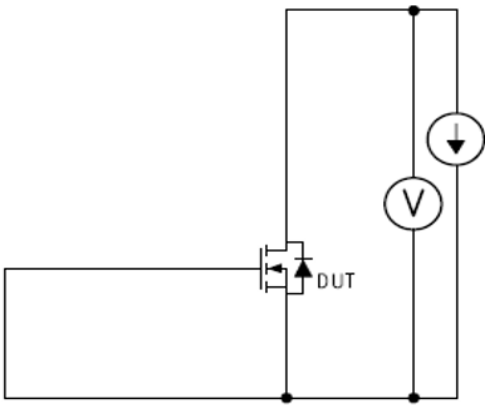
Test Circuit 3
Vth



Test Circuit 4
RDS(on)

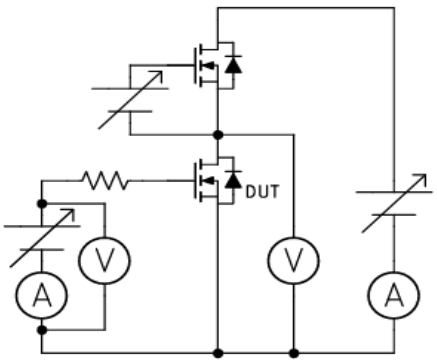


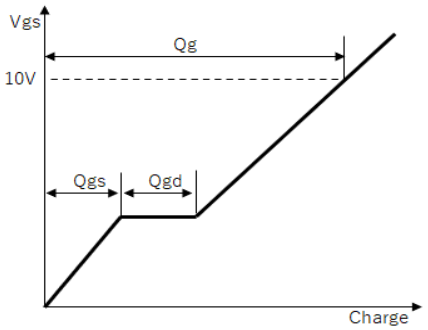
Test Circuit 5
VF



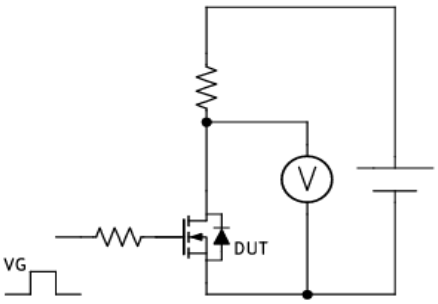
Test circuits

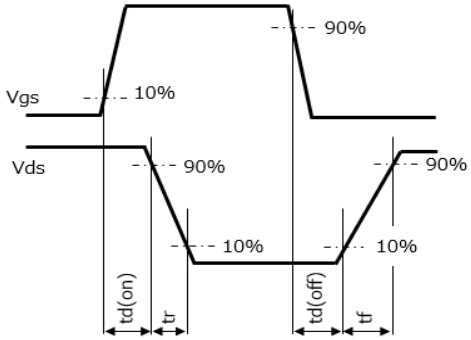
Test Circuit 6
Qg



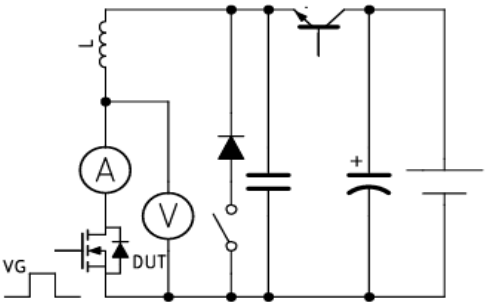


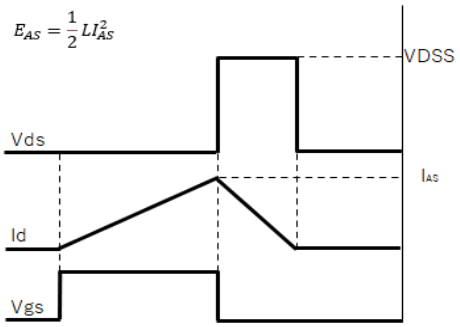
Test Circuit
Swiching Ti



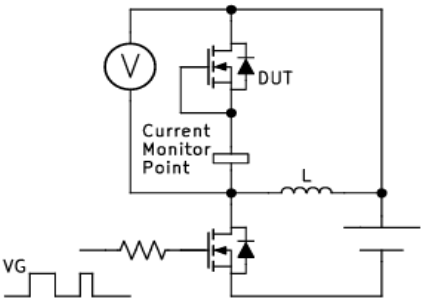


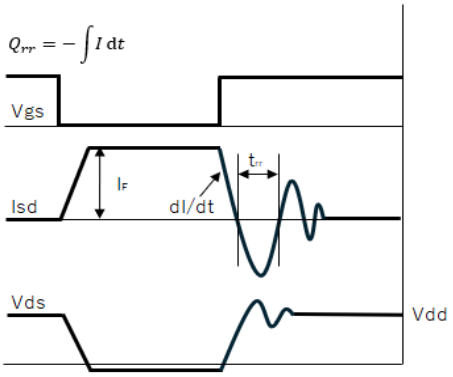
Test Circuit 8
IAS





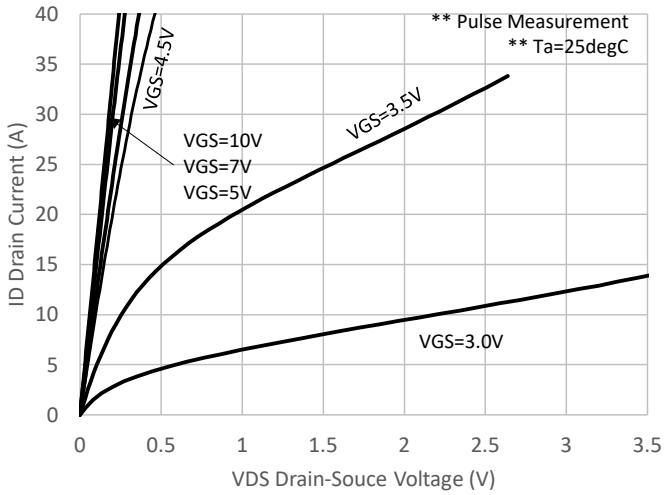
Test Circuit 9
trr/Qrr



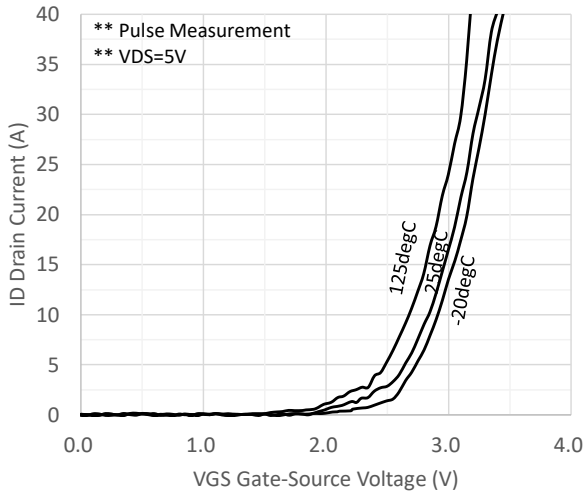


Technical data

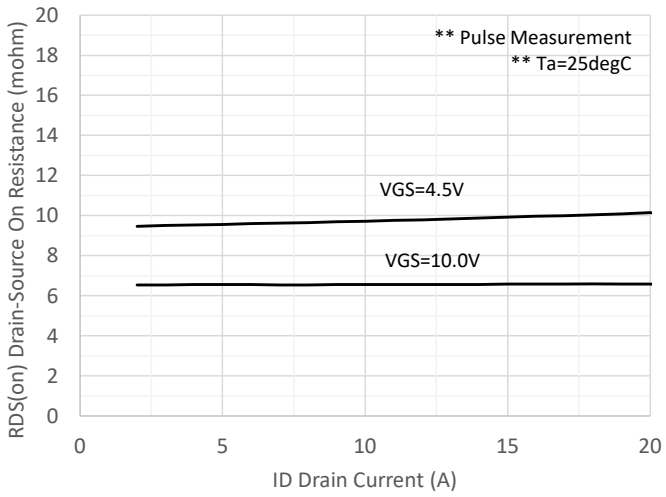
ID to VDS



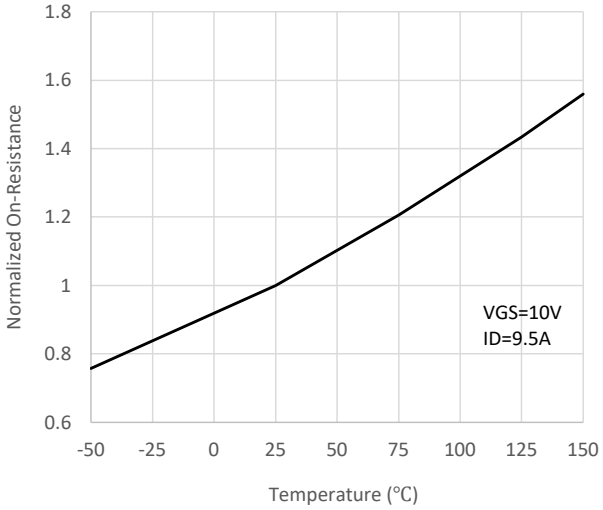
ID to VGS



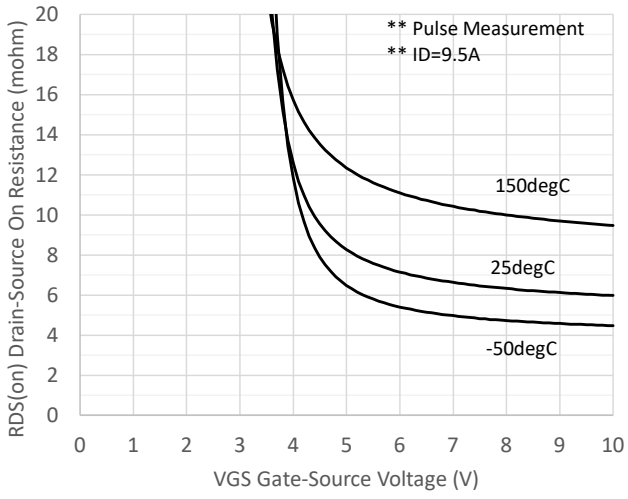
RDS(on) to ID



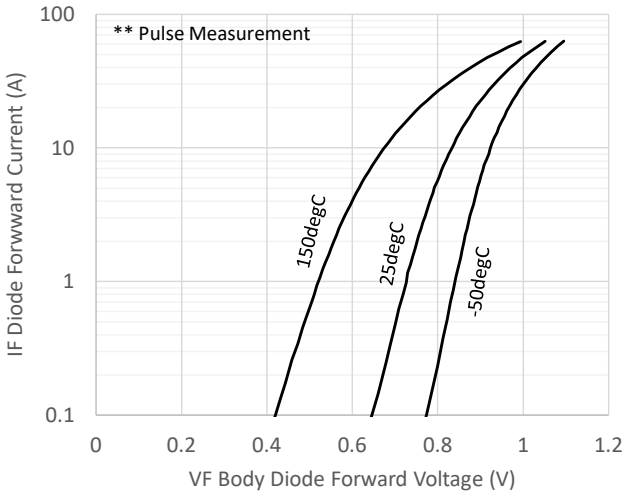
On-Resistance vs Junction Temperature



RDS(on) to VGS

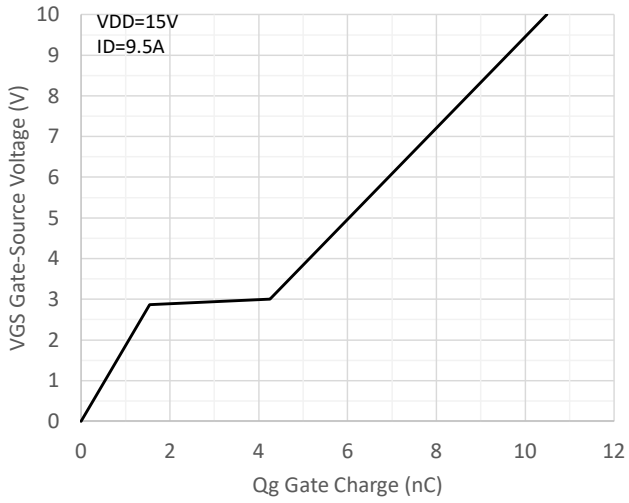


IF to VF

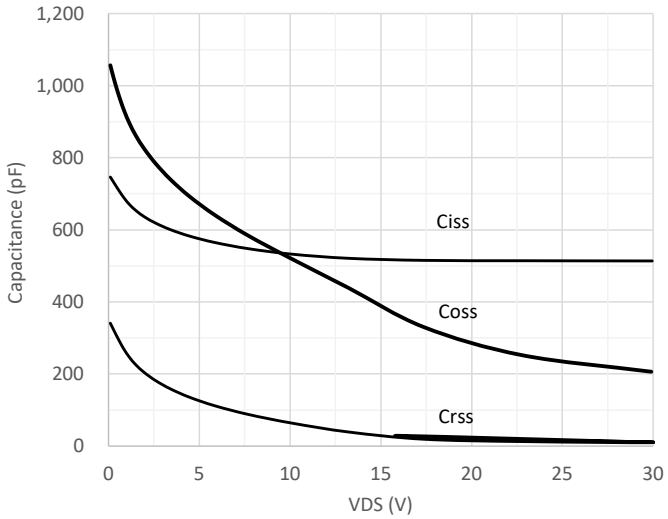


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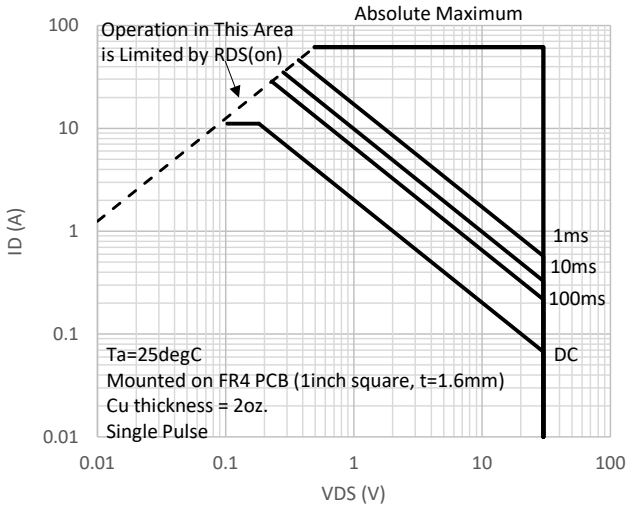
Gate-Charge Characteristics



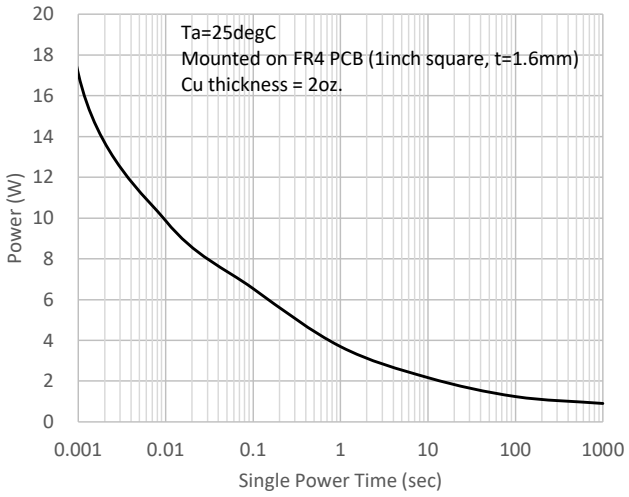
Capacitance Characteristic



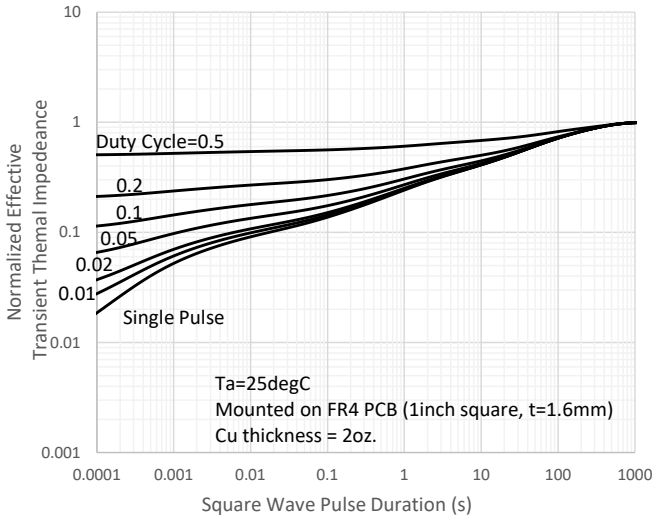
SOA



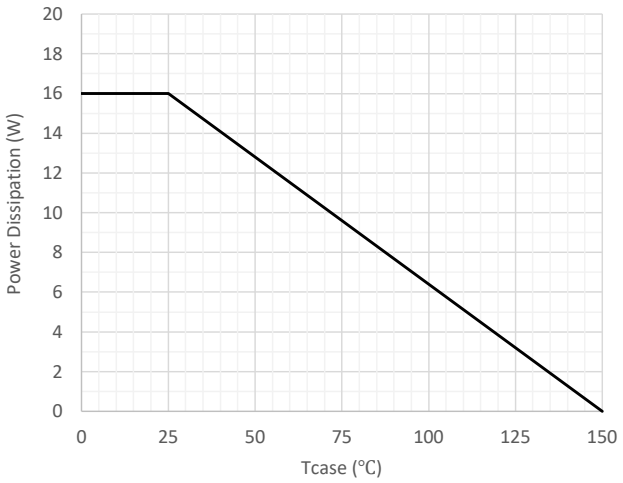
Single Pulse Maximum Power Dissipation



Thermal Response

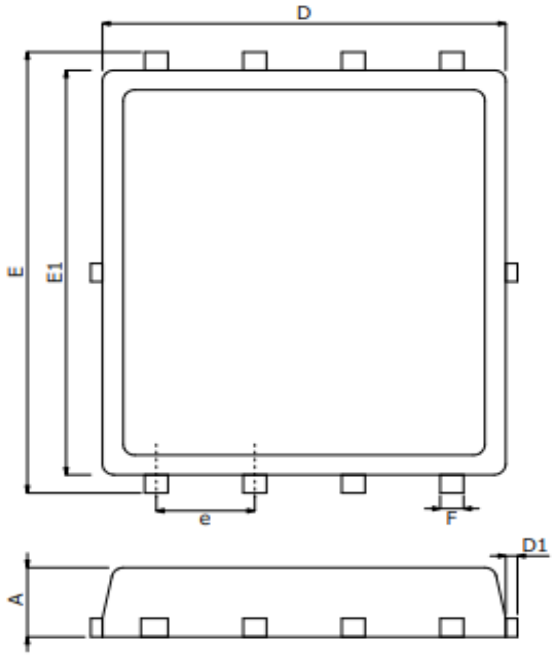


Power Derating



Package Outline Dimensions

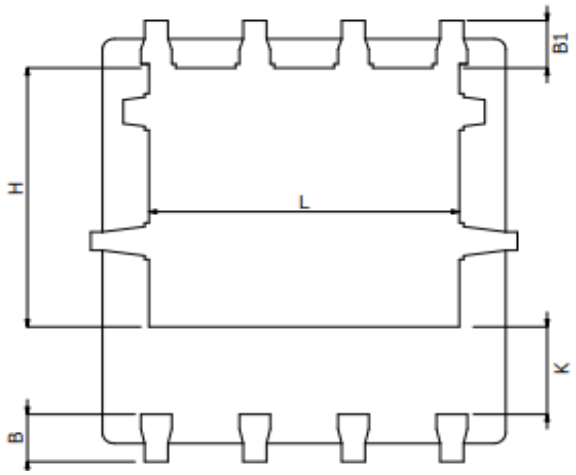
Top View



Side View



Bottom View

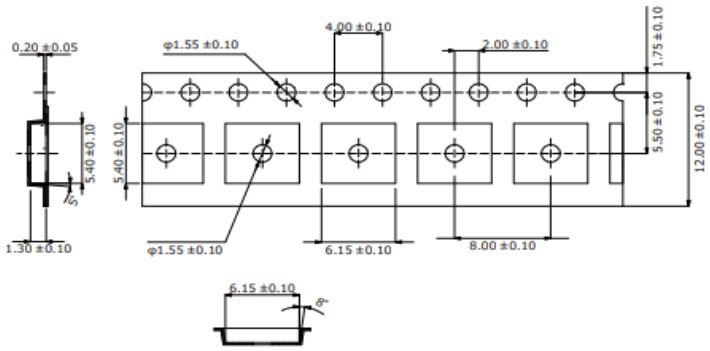


Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.900	0.950	1.000
B	0.480	0.580	0.680
B1	0.550	0.650	0.750
C	0.200	0.254	0.300
D	5.100	5.200	5.300
D1	-	-	0.150
E	5.900	6.050	6.200
E1	5.400	5.550	5.700
e	1.220	1.270	1.320
F	0.250	0.300	0.350
H	3.270	3.470	3.670
L	3.800	4.000	4.200
K	1.200	-	-

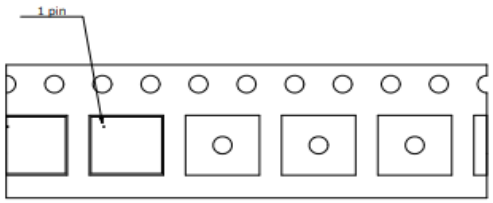
Form

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

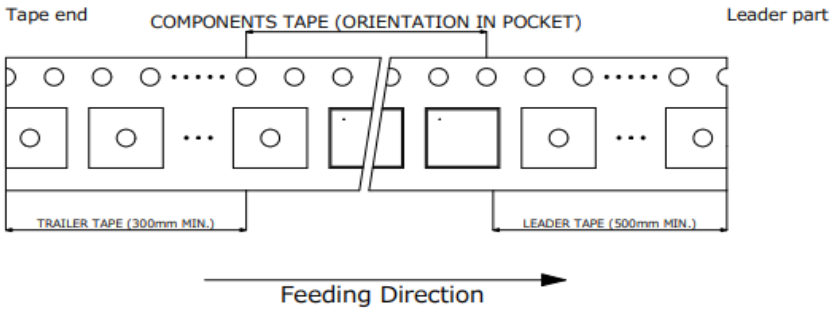
Tape size (mm)



Pin1 Direction



Tape end ~ Leader part (mm)



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