GOSTONE

N-channel Power MOSFET:
30V, 2.1mΩ, 94A, PDFN33

GTN3006F3

Product Summary			
VDSS	VGSS	RDS(ON) TYP/MAX	ID MAX
30V	± 20V	2.1/2.8 mΩ@VGS=10V 3.5/5.2 mΩ@VGS=4.5V	**94A**

Features

- Low RDSon
- Optimized for Load Switch
- High Current Capacity
- Halogen-Free / RoHS Compliant
- ESD Protection Diode Installed (Gate-Source)

Application

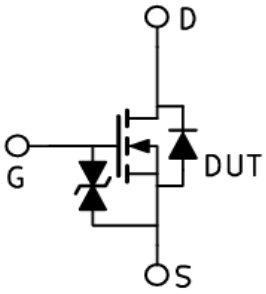
- Battery Charging & Discharging for NB Battery Pack
- DC/DC Converters in Computing.

Marking Symbol Code

- Laser Marking Device Code: AA

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

Equivalent circuit



Form

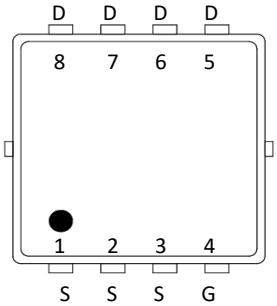
- Tape & Reel Embossed Type: 5,000pcs / reel

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	94	A
	Tc=100°C		60	A
Pulsed Drain Current*1		IDM	188	A
Continuous Drain Current	T_A=25°C	IDSM	25	A
	T_A=70°C		20	A
Avalanche Current		IAS	30	A
Avalanche Energy	L=0.1mH	EAS	45.0	mJ
Power Dissipation	Tc=25°C	PD	51	W
	Tc=100°C		20	W
Power Dissipation*3	T_A=25°C	PDSM	4.5	W
	T_A=70°C		2.9	W
Junction Temperature		Tj	150	℃
Storage Temperature		Tstg	-55 to +150	℃

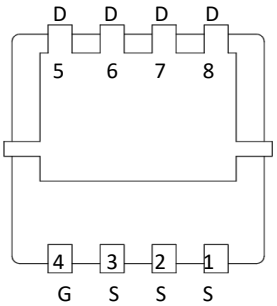
Thermal Characteristics (Typical)				
Parameter		Symbol	TYP	Unit
Junction-to Ambient (T_A=25°C)				
	t ≤ 10s	R_{thJA}*2	22.0	℃/W
	Steady-State		54.0	℃/W
Junction-to Case (Tc=25°C)				
	Steady-State	R_{thJC}	1.90	℃/W

*1Pulse width limited by maximum junction temperature.
*2The value of R_{thJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25℃.
*3The Power dissipation is based on R_{thJA} t ≤ 10s value.

Top View



Bottom View



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

Electrical Characteristics (Tj=25℃)

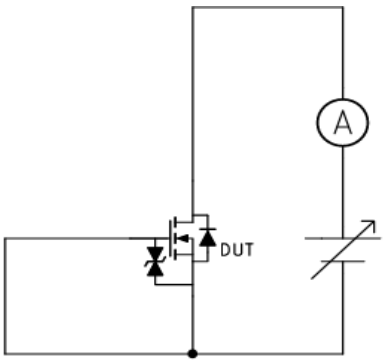
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VDSS	ID=250μA, VGS=0V	30			V
Zero Gate Voltage Drain Current	IDSS	VDS=24V, VGS=0V			1	μA
Gate-Source Leakage Current	IGSS	VGS=±20V, VDS=0V			±10	μA
Gate-Source Threshold Voltage	Vth	VDS=VGS, ID=250μA	1.2	1.7	2.4	V
Drain-Source On-State Resistance	RDS(on)1 RDS(on)2	ID=20A, VGS=10V ID=20A, VGS=4.5V		2.1 3.5	2.8 5.2	mΩ
Forward Transconductance	gFS	VGS=5V, ID=20A		110		S
Input Capacitance *1 Output Capacitance *1 Reverse Transfer Capacitance *1	Ciss Coss Crss	VDS=15V, VGS=0V, f=1MHz		1,845 1,470 92		pF
Gate Resistance *1	Rg	f=1MHz		8		Ω
Turn-On Delay Time *1 *2 Rise Time *1 *2	td(on) tr	VDD=15V, VGS=10V, ID=20A		9 5		ns
Turn-Off Delay Time *1 *2 Fall Time *1 *2	td(off) tf	VDD=15V, VGS=10V, ID=20A		57 38		ns
Total Gate Charge *1 Gate-Source Charge *1 Gate-Drain Charge *1	Qg Qgs Qgd	VDD=15V, VGS=10V, ID=20A		32.0 5.6 8.0		nC
Diode Forward Voltage	VSD	IS=1A, VGS=0V		0.7	1.0	V
Maximum Body Diode Continuous Current	IS				46	A
Body Diode Reverse Recovery Time *1 Body Diode Reverse Recovery Charge *1	trr Qrr	IF=20A, di/dt=100A/μs		44 35		ns nC

Note *1 Guaranteed by Design

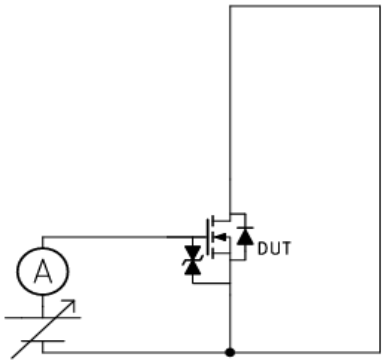
Note *2 Measurement Circuit for Switching Characteristics

Test circuits

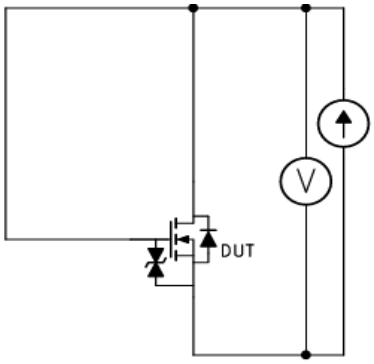
Test Circuit 1
VDSS/IDSS



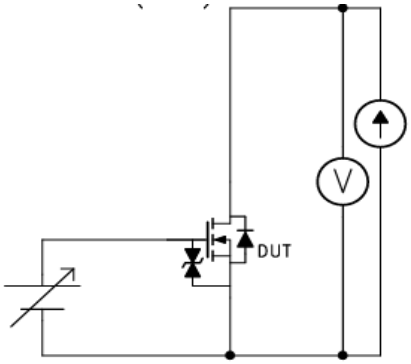
Test Circuit 2
IGSS



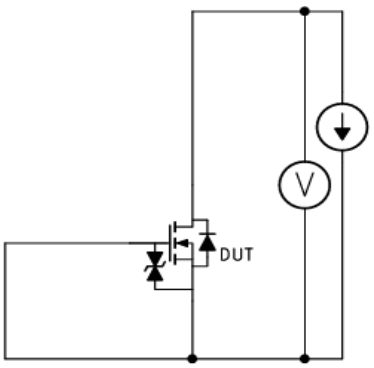
Test Circuit 3
Vth



Test Circuit 4
RDS(on)

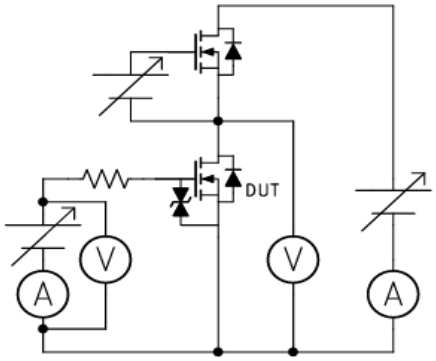


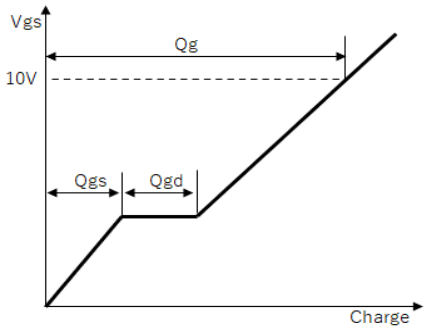
Test Circuit 5
VF



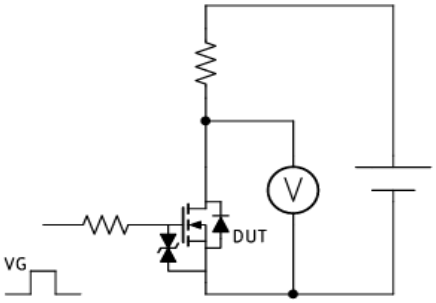
Test circuits

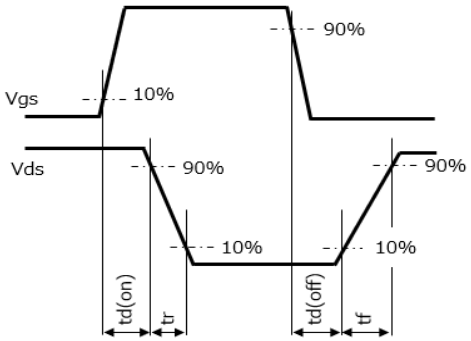
Test Circuit 6
Qg



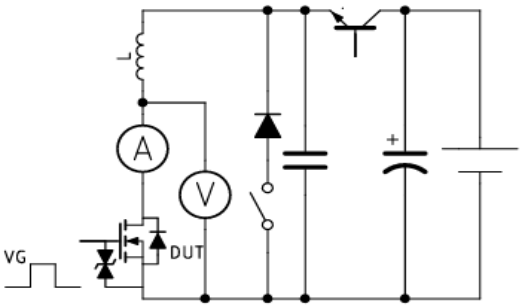


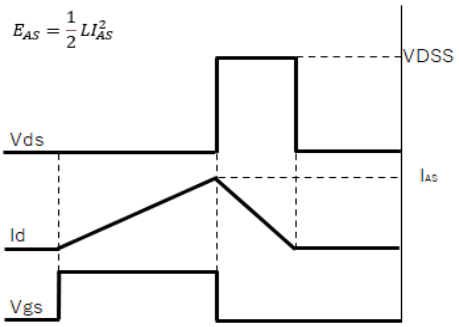
Test Circuit 7
Swiching Time



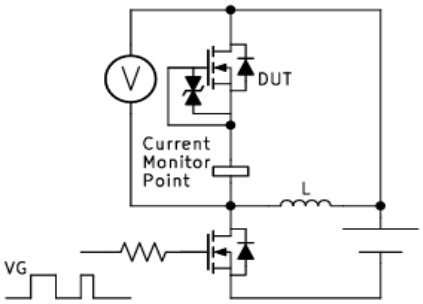


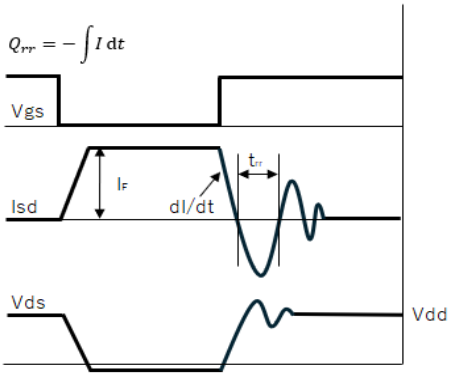
Test Circuit 8
IAS





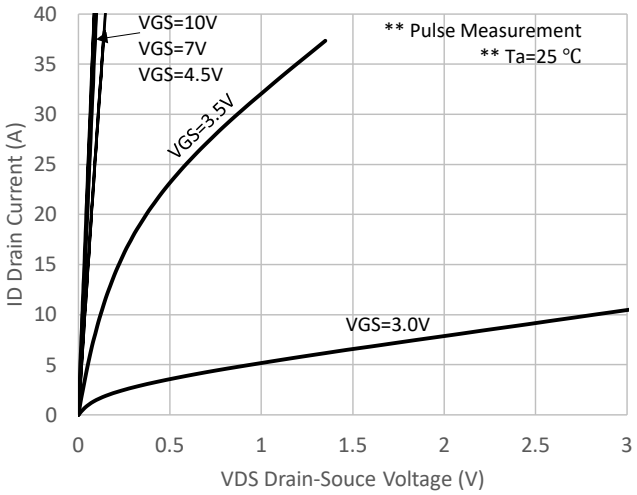
Test Circuit 9
trr/Qrr



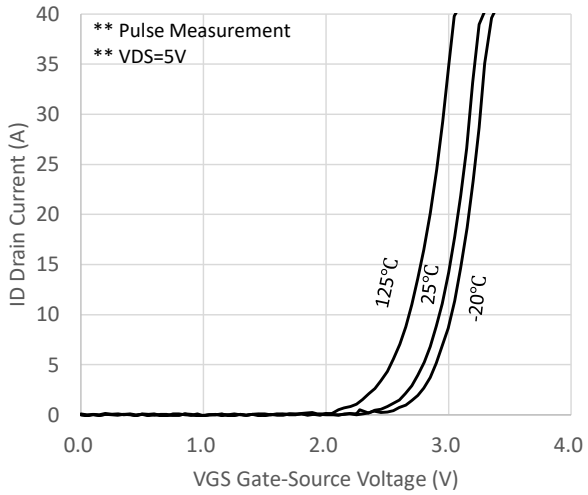


Technical data

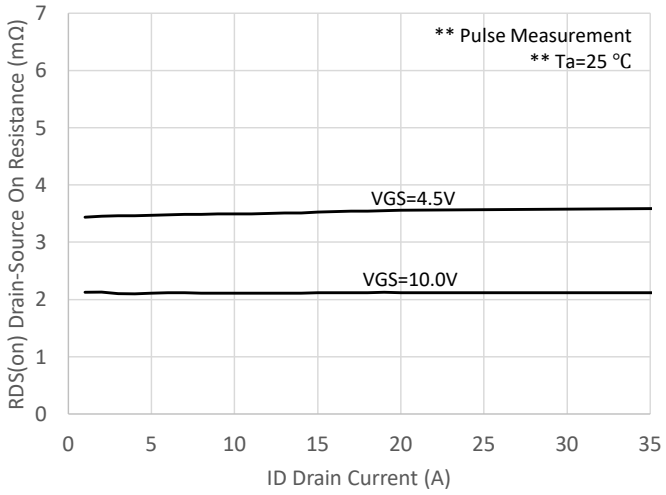
ID to VDS



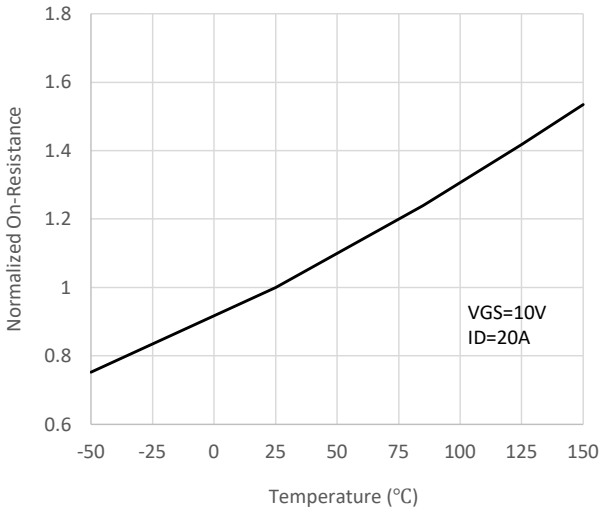
ID to VGS



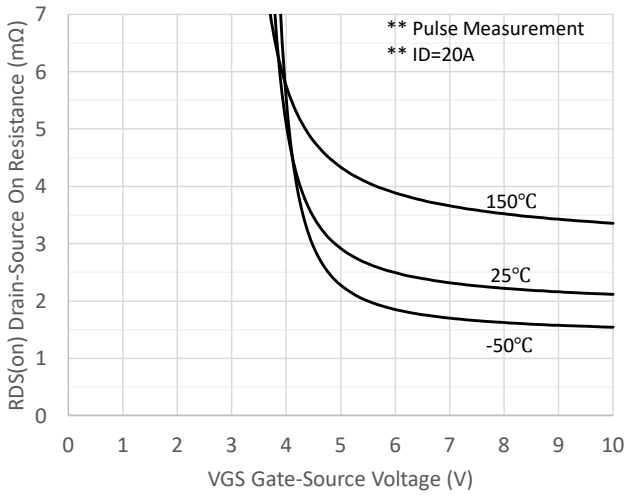
RDS(on) to ID



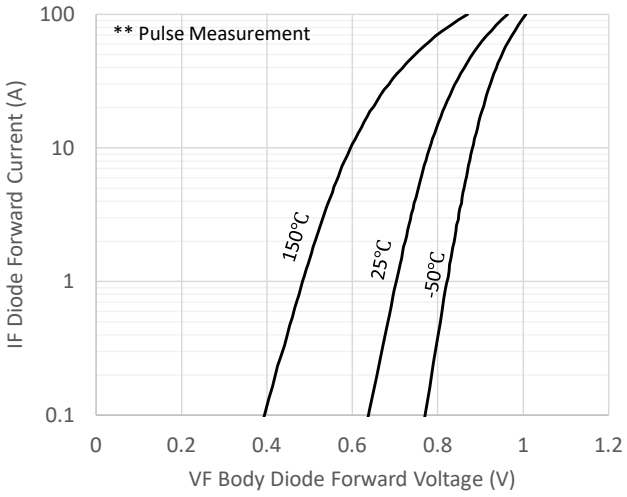
On-Resistance vs Junction Temperature



RDS(on) to VGS

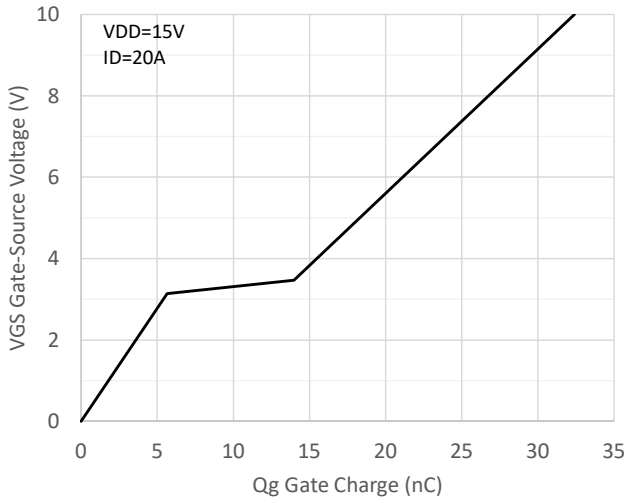


IF to VF

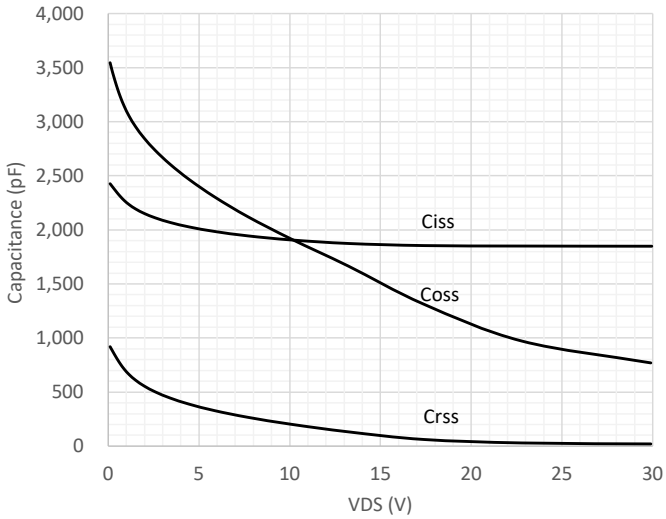


Technical data

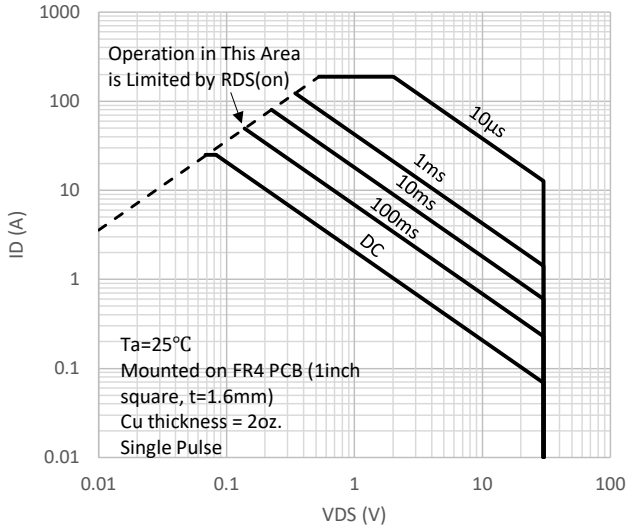
Gate-Charge Characteristics



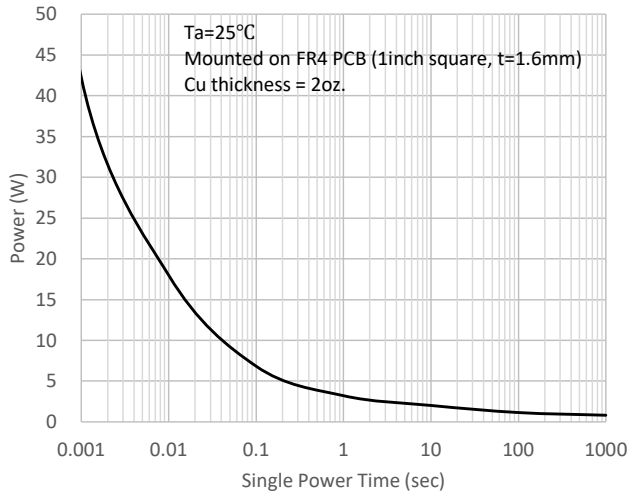
Capacitance Characteristic



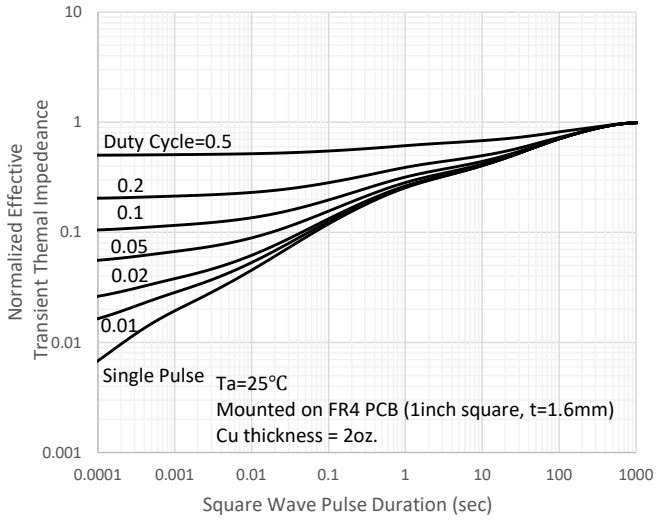
SOA



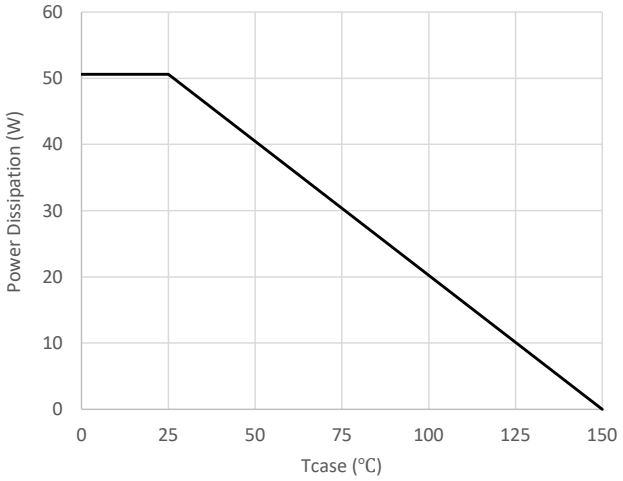
Single Pulse Maximum Power Dissipation



Thermal Response

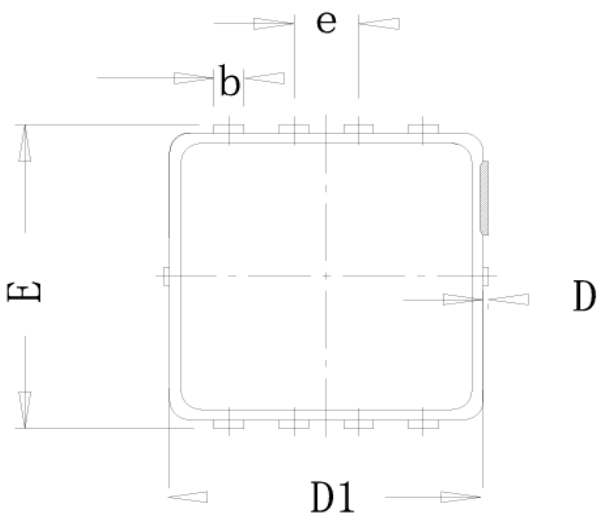


Power Derating

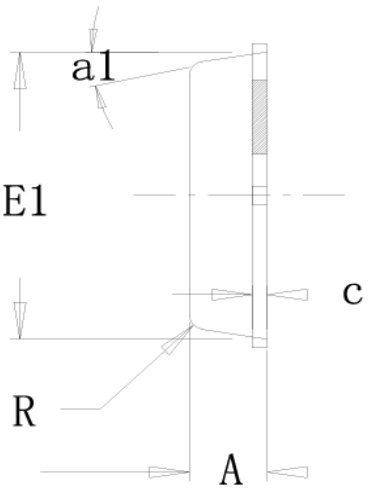


Package Outline Dimensions

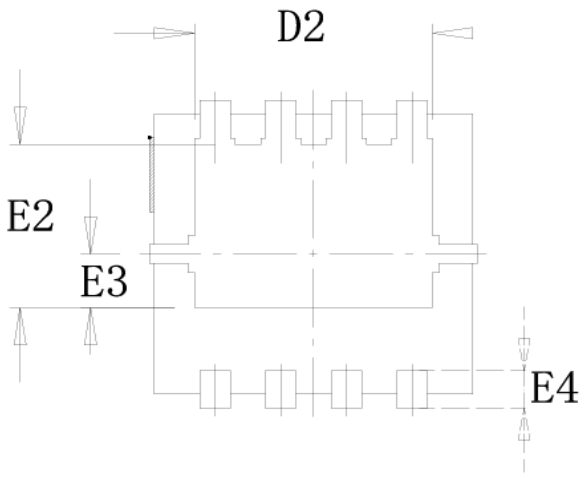
Top View



Side View



Bottom View

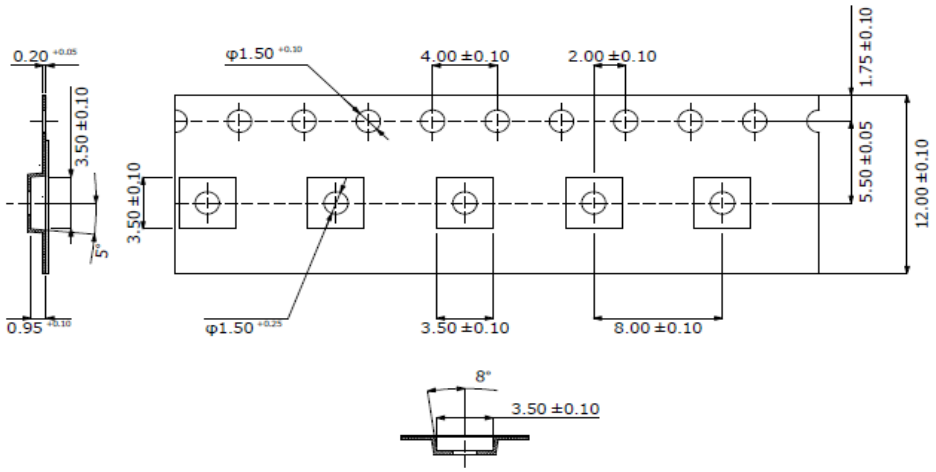


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.750	0.780	0.810
* b	0.250	0.300	0.350
c	---	0.152	---
* D	0.000	0.050	0.100
D1	3.120	3.150	3.180
* D2	---	2.590	---
* E	3.200	3.300	3.400
E1	3.090	3.120	3.150
E2	---	1.740	---
E3	---	0.440	---
* E4	---	0.330	---
R	---	0.150	---
* e	0.65BSC		
a1°	---	12°	---

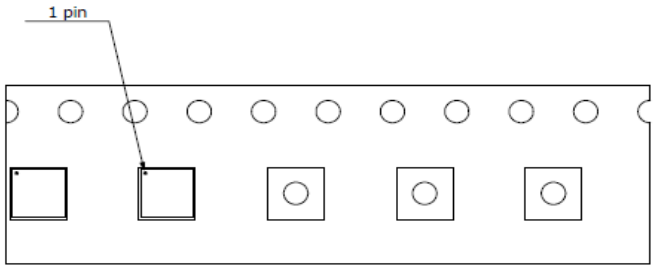
Form

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

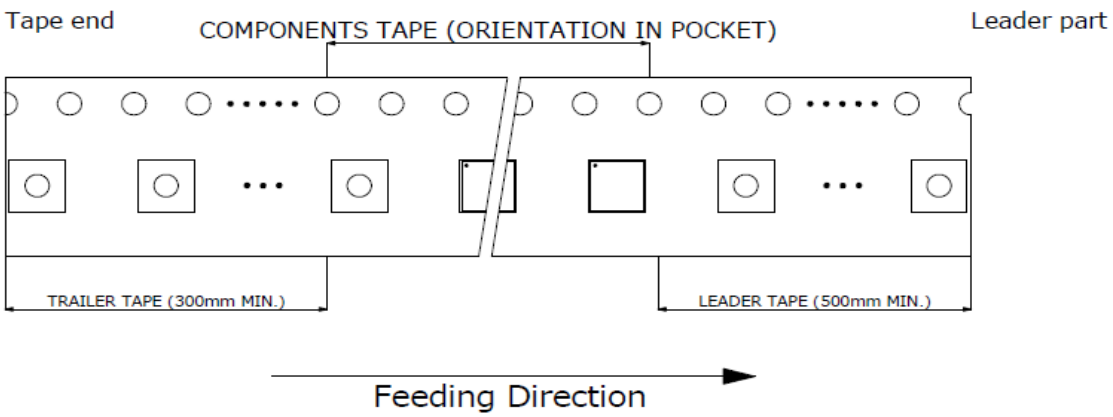
Tape size (mm)



Pin1 Direction



Tape end ~ Leader part (mm)



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