

N-channel Power MOSFET:
32V, 1.6mohm, 81A, DFN3333

Product Summary

VDSS	VGSS	RDS(ON) TYP/MAX	ID MAX
32V	± 20V	1.6/2.4 mΩ@VGS=10V 2.4/4.0 mΩ@VGS=4.5V	81A

Marking Symbol Code

- ❖ Laser Marking Device Code: AG



GS : Gostone (fixed)
AG : 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

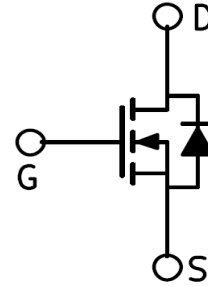
Features

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

Application

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

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	IDM	81	A
		51	A
Pulsed Drain Current*1	IDM	180	A
Continuous Drain Current	IDSM	21	A
		17	A
Avalanche Current	IAS	40	A
Avalanche Energy	EAS	80	mJ
Power Dissipation	PD	32.1	W
		12.8	W
Power Dissipation*3	PDMS	4.6	W
		3.0	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55 to +150	°C

*1Pulse width limited by maximum junction temperature.

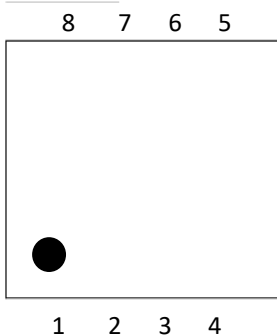
*2The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

*3The Power dissipation is based on R_{θJA} t ≤ 10s value.

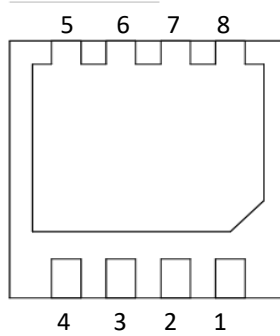
Thermal Characteristics (Typical)

Parameter	Symbol	TYP	Unit
Junction-to Ambient (T _A =25°C)			
t ≤ 10s	RthJA*2	21.5	°C/W
Steady-State		52.9	°C/W
Junction-to Case (Tc=25°C)			
Steady-State	RthJC	3.0	°C/W

Top View



Bottom View



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

Electrical Characteristics (Tj=25degC)

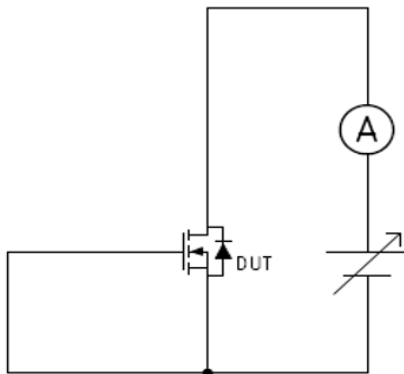
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VDSS	ID=250μA, VGS=0V	32			V
Zero Gate Voltage Drain Current	IDSS	VDS=32V, VGS=0V			1	μA
Gate-Source Leakage Current	IGSS	VGS=±20V, VDS=0V			±100	nA
Gate-Source Threshold Voltage	Vth	VDS=VGS, ID=250μA	1.2	1.6	2.4	V
Drain-Source On-State Resistance	RDS(on)1	ID=20A, VGS=10V		1.6	2.4	mΩ
	RDS(on)2	ID=20A, VGS=4.5V		2.4	4.0	
Forward Transconductance	gFS	VGS=5V, ID=20A		126		S
Input Capacitance *1	Ciss	VDS=15V, VGS=0V, f=1MHz		3,130		pF
Output Capacitance *1	Coss			1,945		
Reverse Transfer Capacitance *1	Crss			112		
Gate Resistance *1	Rg	f=1MHz		10		Ω
Turn-On Delay Time *1 *2	td(on)	VDD=15V, VGS=10V, ID=20A		10		ns
Rise Time *1 *2	tr			6		
Turn-Off Delay Time *1 *2	td(off)	VDD=15V, VGS=10V, ID=20A		120		ns
Fall Time *1 *2	tf			78		
Total Gate Charge *1	Qg	VDD=15V, VGS=10V, ID=20A		57		nC
Gate-Source Charge *1	Qgs			9		
Gate-Drain Charge *1	Qgd			13		
Diode Forward Voltage	VSD	IS=20A, VGS=0V			1.0	V
Maximum Body Diode Continuous Current	IS				32	A
Body Diode Reverse Recovery Time *1	trr	IF=20A, di/dt=100A/μs		44		ns
Body Diode Reverse Recovery Charge *1	Qrr			36		nC

Note *1 Guaranteed by Design

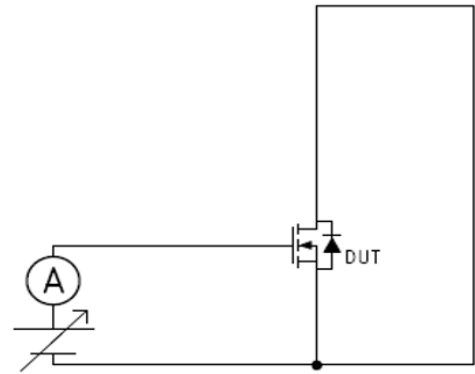
Note *2 Measurement Circuit for Switching Characteristics

Test circuits

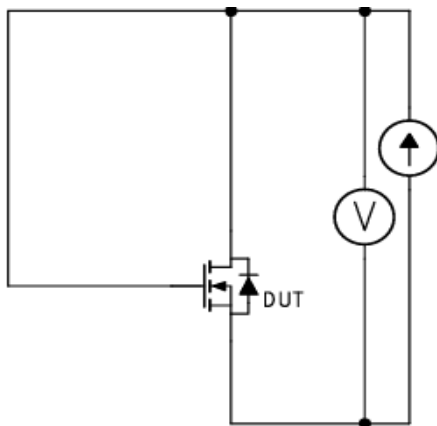
Test Circuit 1
VDSS/IDSS



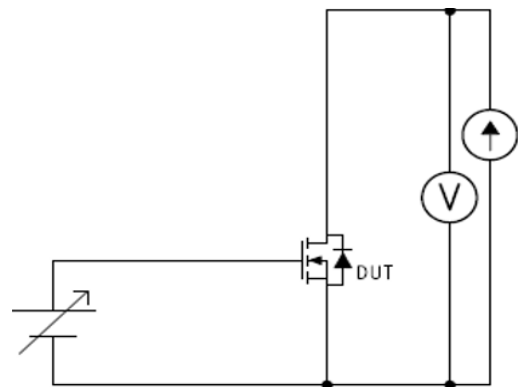
Test Circuit 2
IGSS



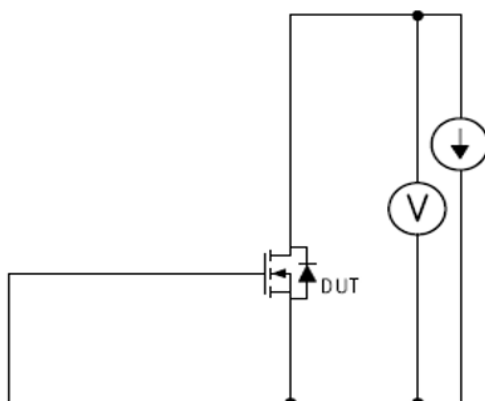
Test Circuit 3
Vth



Test Circuit 4
RDS(on)

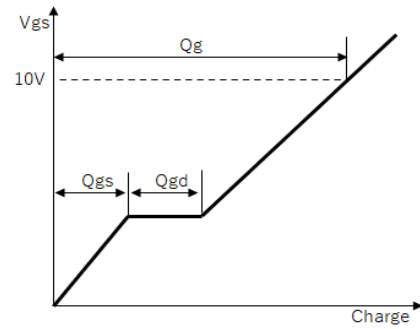
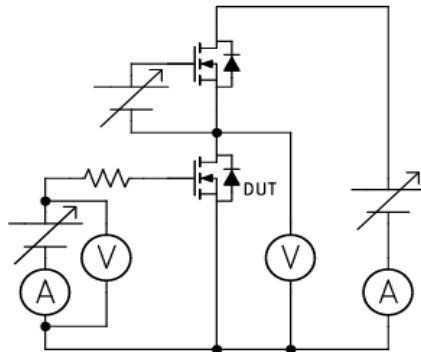


Test Circuit 5
VF

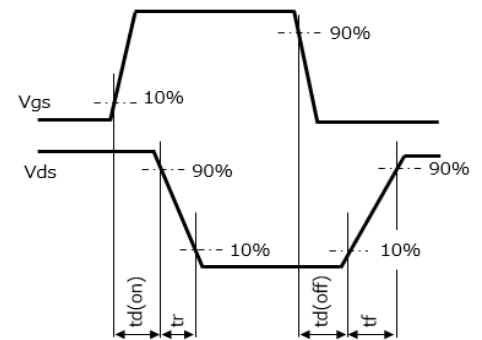
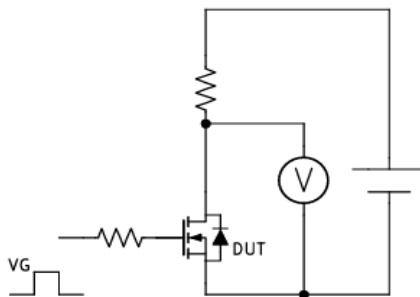


Test circuits

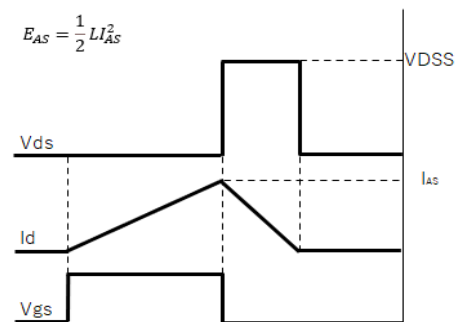
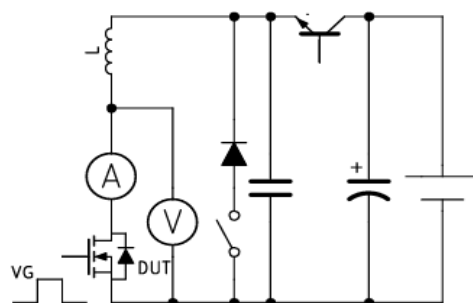
Test Circuit 6
Qg



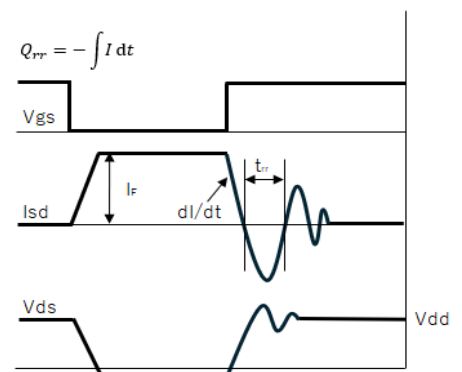
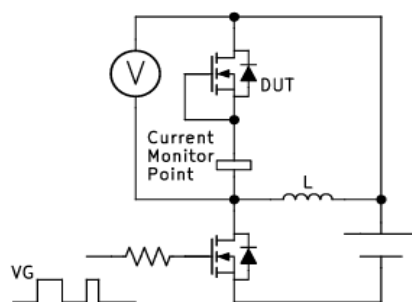
Test Circuit 7
Switching Time

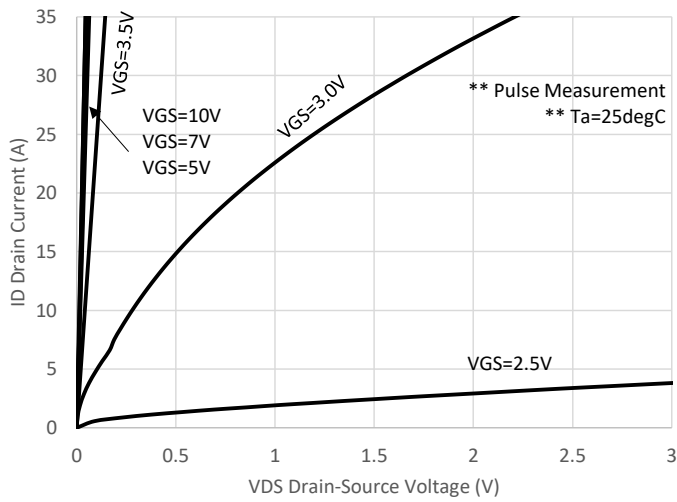
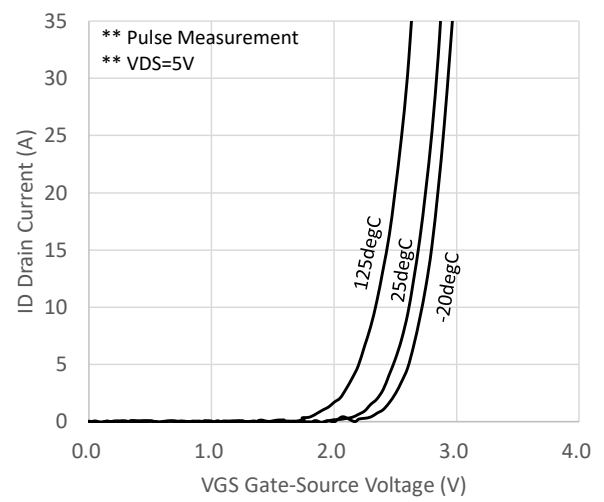
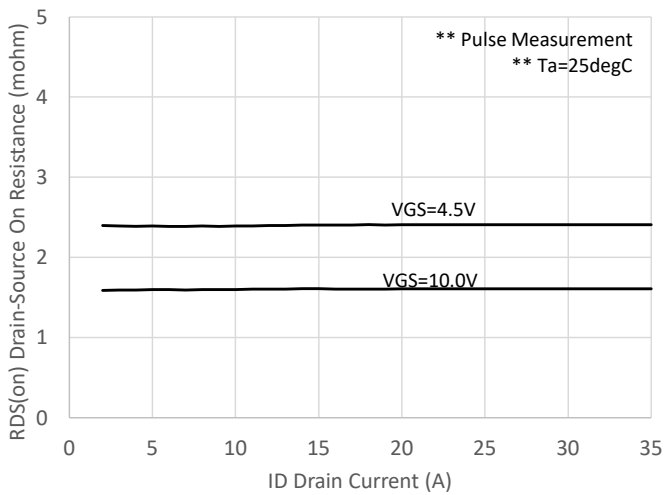
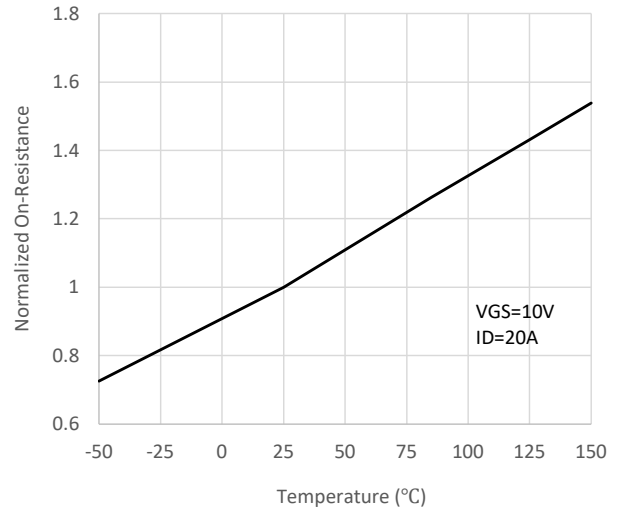
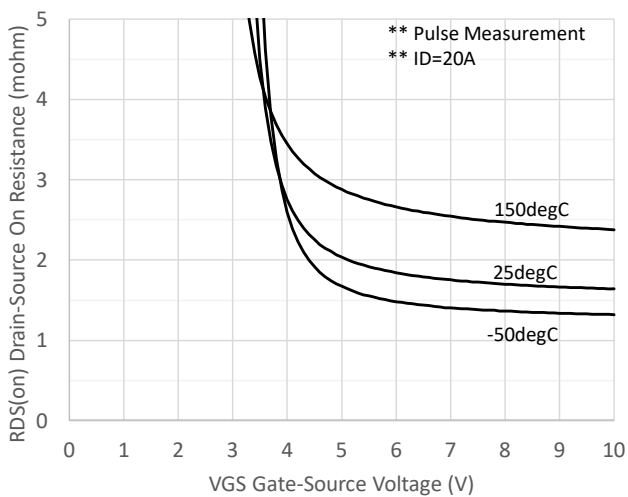
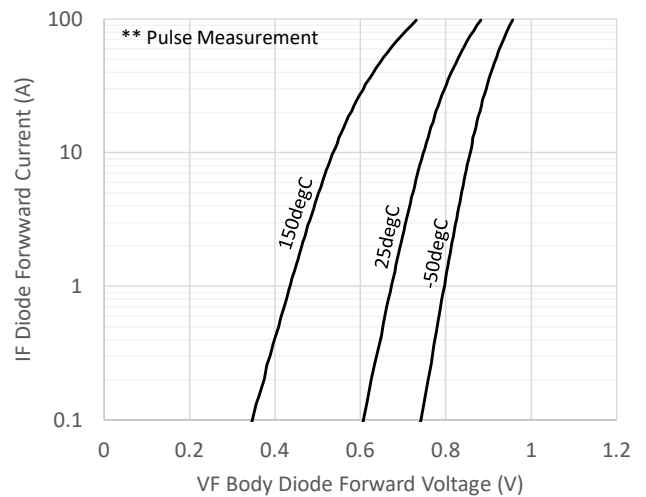


Test Circuit 8
IAS



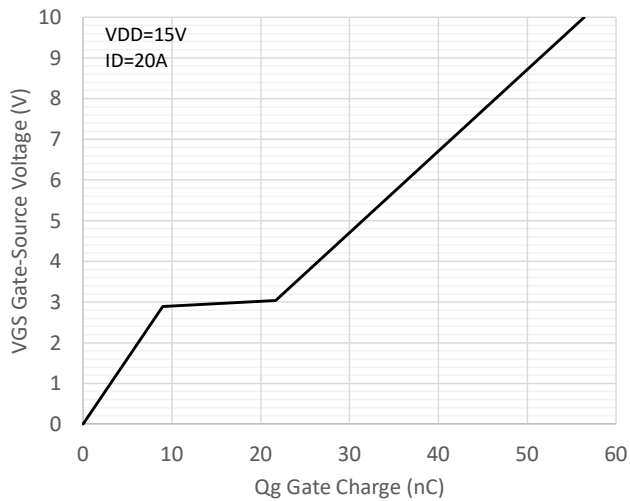
Test Circuit 9
trr/Qrr



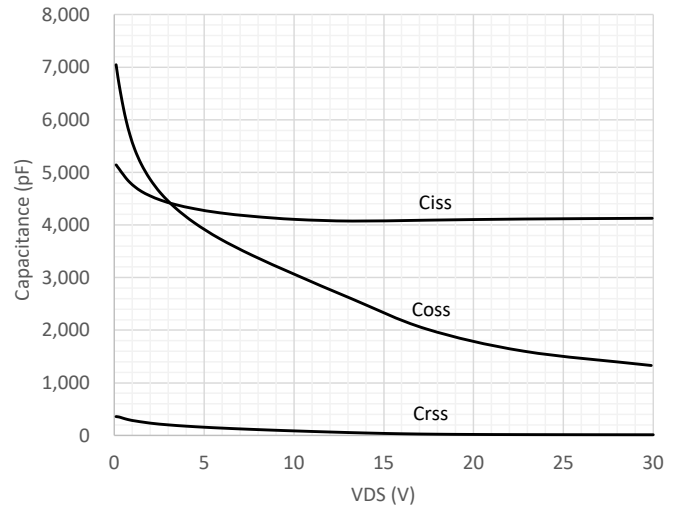
Technical data
ID to VDS

ID to VGS

RDS(on) to ID

On-Resistance vs Junction Temperature

RDS(on) to VGS

IF to VF


Technical data

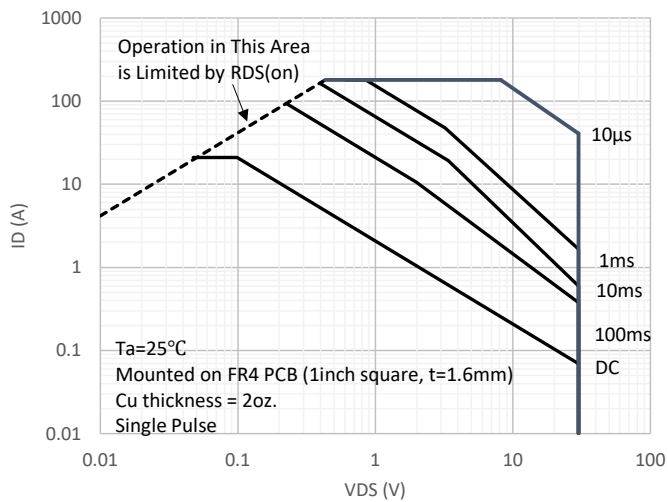
Gate-Charge Characteristics



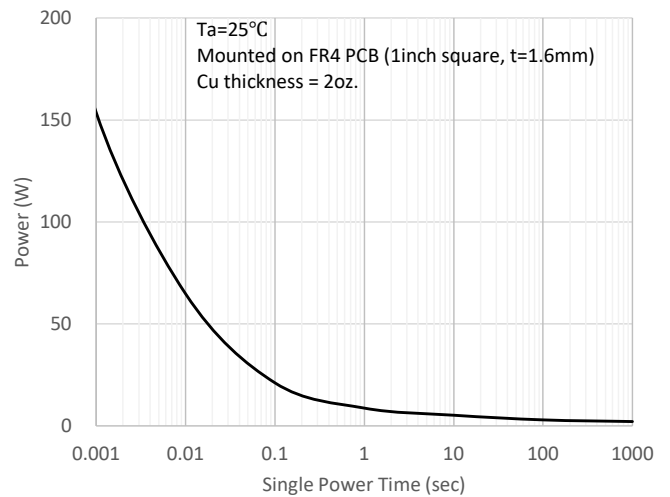
Capacitance Characteristic



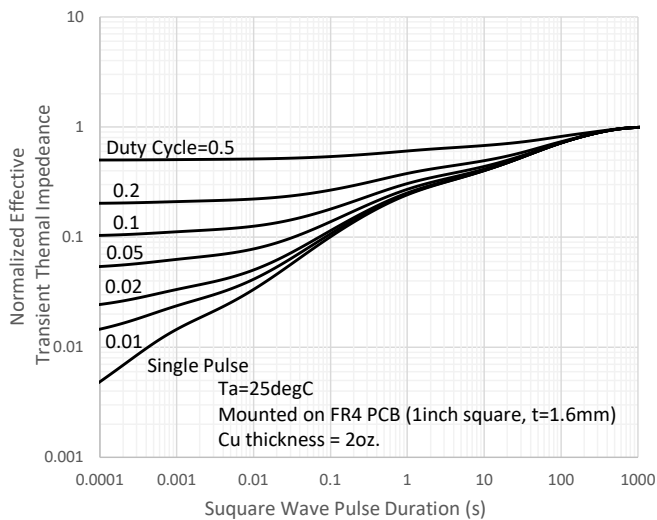
SOA



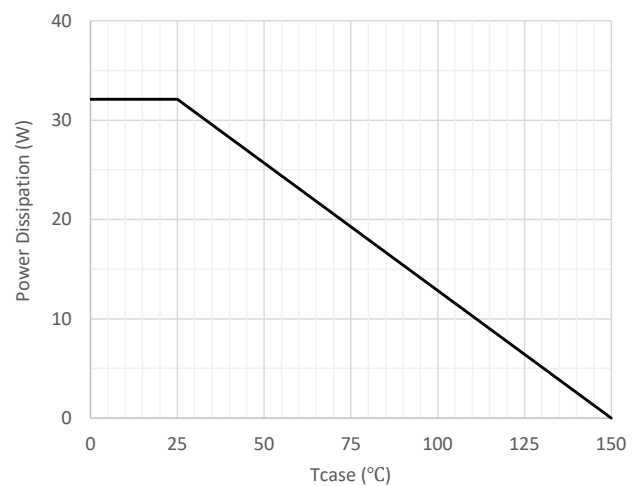
Single Pulse Maximum Power Dissipation



Thermal Response

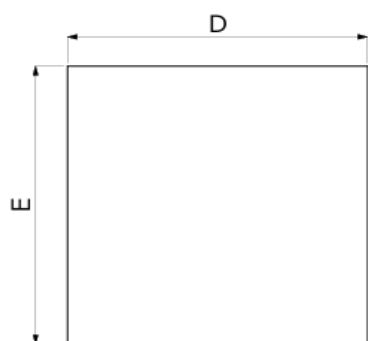


Power Derating



Package Outline Dimensions

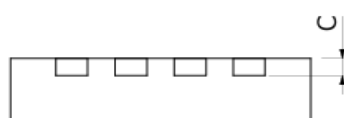
Top View



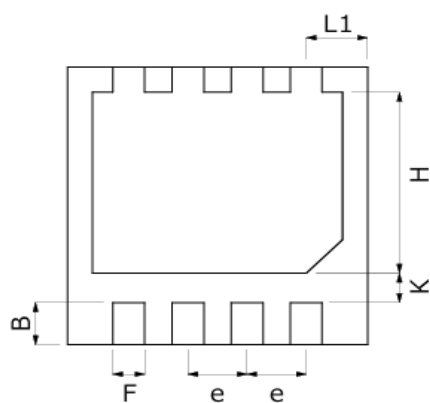
Side View



Side View



Bottom View



Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.700	0.750	0.800
B	0.400	0.500	0.600
C	0.153	0.203	0.253
D	3.200	3.300	3.400
E	3.200	3.300	3.400
e	0.600	0.650	0.700
F	0.300	0.350	0.400
H	2.050	2.150	2.250
K	0.250	0.350	0.400
L	2.650	2.750	2.800
L1	0.575	0.675	0.775

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

Technical drawing of a mechanical part, showing a side view and a top view. The side view (top) shows a rectangular part with a total width of 12.00 ± 0.10 and a total height of 1.75 ± 0.10. The part features a central horizontal slot with a width of 8.00 ± 0.10 and a depth of 3.50 ± 0.10. The slot is flanked by two vertical sections, each 3.50 ± 0.10 wide. The top surface has a flat section of 4.00 ± 0.10 and a sloped section of 2.00 ± 0.10. The bottom surface has a flat section of 3.50 ± 0.10 and a sloped section of 0.95 ± 0.10. The part is shown with a dashed line indicating a hidden feature. The top view (bottom) shows a rectangular part with a total width of 8.00 ± 0.10 and a total height of 3.50 ± 0.10. The part features a central horizontal slot with a width of 8.00 ± 0.10 and a depth of 3.50 ± 0.10. The slot is flanked by two vertical sections, each 3.50 ± 0.10 wide. The top surface has a flat section of 4.00 ± 0.10 and a sloped section of 2.00 ± 0.10. The bottom surface has a flat section of 3.50 ± 0.10 and a sloped section of 0.95 ± 0.10. The part is shown with a dashed line indicating a hidden feature.

A diagram of a 16-pin connector. A horizontal line represents the connector with 16 circular pins. Below the line, the first four pins are each enclosed in a square box. The first box contains a small circle, and the second box contains a larger circle. The remaining two boxes are empty. A label '1 pin' with a leader line points to the first pin.

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 a break in the middle. It contains two rows of circular holes and square pockets, each containing a smaller circle.
- 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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