

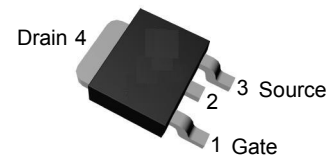
Features

- 100V/40A
 $R_{DS(ON)} = 23.5\text{m}\Omega(\text{typ.}) @ V_{GS} = 10\text{V}$
 $R_{DS(ON)} = 26.4\text{m}\Omega(\text{typ.}) @ V_{GS} = 4.5\text{V}$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

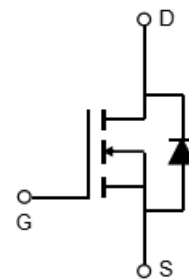
Applications

- Power Management for SMPS.
- DC-DC Converter.

Pin Description



Top View of TO-252-2



N-Channel MOSFET

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		100	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _C =25°C	40	A
I _D	Continuous Drain Current	T _C =25°C	40	A
		T _C =100°C	24	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	105	
P _D	Maximum Power Dissipation	T _C =25°C	52	W
		T _C =100°C	21	
R _{θJC}	Thermal Resistance-Junction to Case		2.4	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		50	°C/W
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	24	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	144	mJ

Note a : Pulse width limited by maximum junction temperature.

Note b : UIS tested and pulse width limited by maximum junction temperature (initial temperature $T_J=25^{\circ}\text{C}$).

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

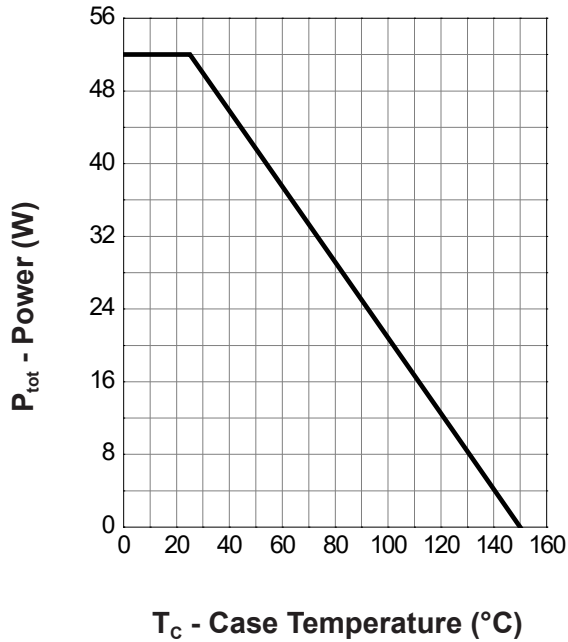
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =80V, V _{GS} =0V T _J =85°C	-	-	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.8	1.2	1.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^c	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =17A	-	23.5	33.2	mΩ
		V _{GS} =4.5V, I _{DS} =11A	-	26.4	33.4	mΩ
Diode Characteristics						
V _{SD} ^c	Diode Forward Voltage	I _{SD} =8A, V _{GS} =0V	-	0.8	1.3	V
t _{rr} ^d	Reverse Recovery Time	I _{SD} =17A, dI _{SD} /dt=100A/μs	-	33	-	ns
Q _{rr} ^d	Reverse Recovery Charge		-	48	-	nC
Dynamic Characteristics ^d						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.5	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, Frequency=1.0MHz	-	2725	2943	pF
C _{oss}	Output Capacitance		-	131	-	
C _{rss}	Reverse Transfer Capacitance		-	108	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, R _L =30Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	12	22	ns
t _r	Turn-on Rise Time		-	6	11	
t _{d(OFF)}	Turn-off Delay Time		-	23	41	
t _f	Turn-off Fall Time		-	23	41	
Gate Charge Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _{DS} =17A	-	14	19.6	nC
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =4.5V, I _{DS} =17A	-	6.9	-	
Q _{gs}	Gate-Source Charge		-	2.5	-	
Q _{gd}	Gate-Drain Charge		-	3.4	-	

Note c : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

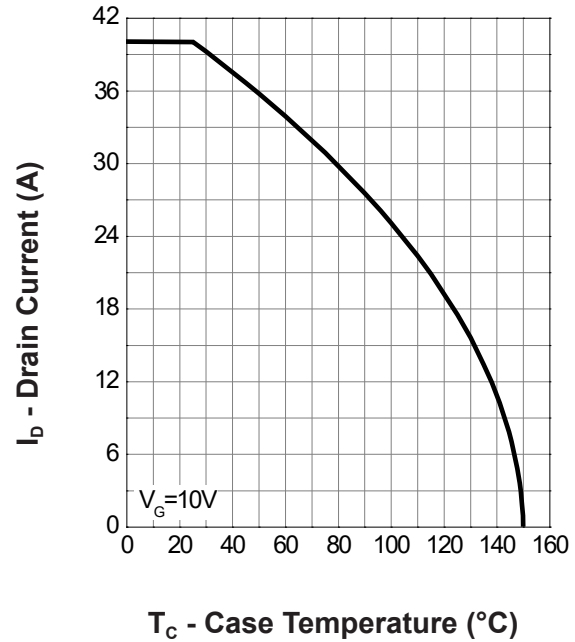
Note d : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

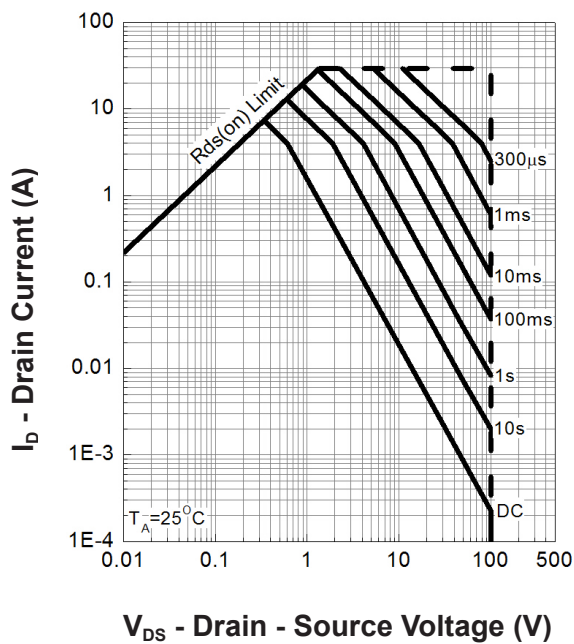
Power Dissipation



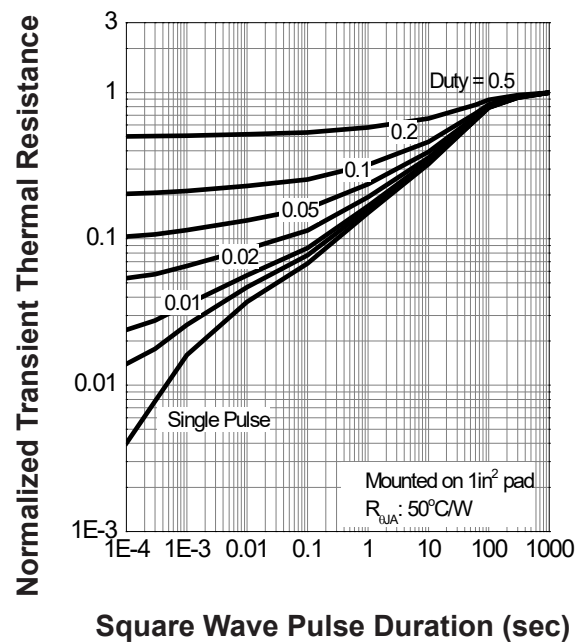
Drain Current



Safe Operation Area

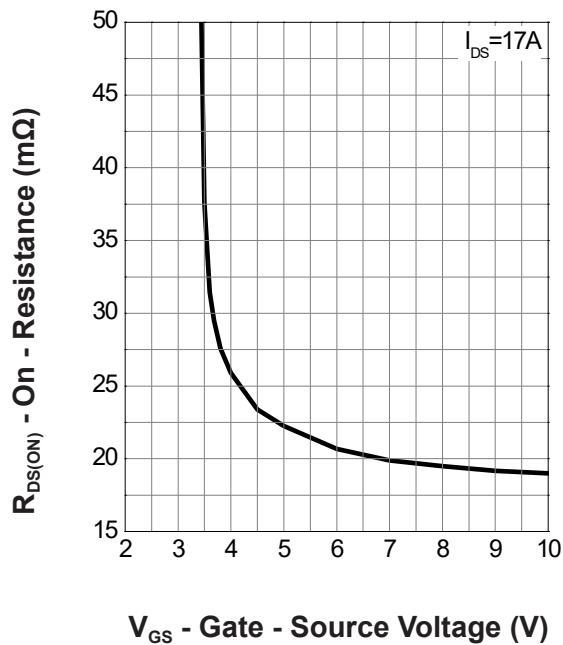


Thermal Transient Impedance

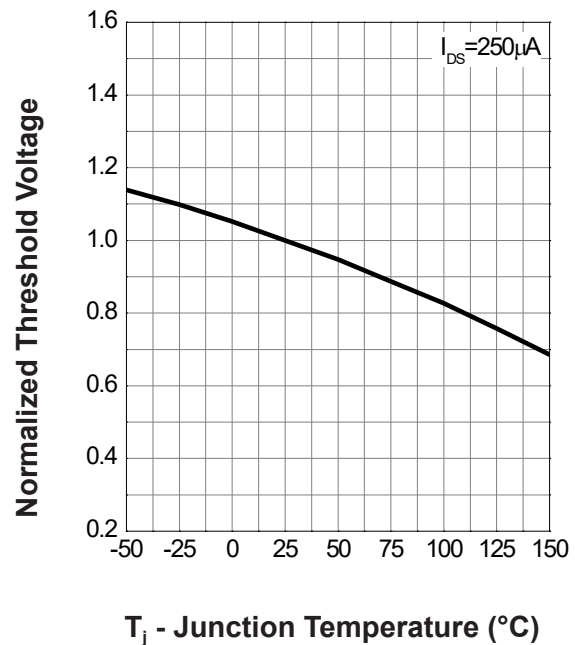


Typical Operating Characteristics(Cont.)

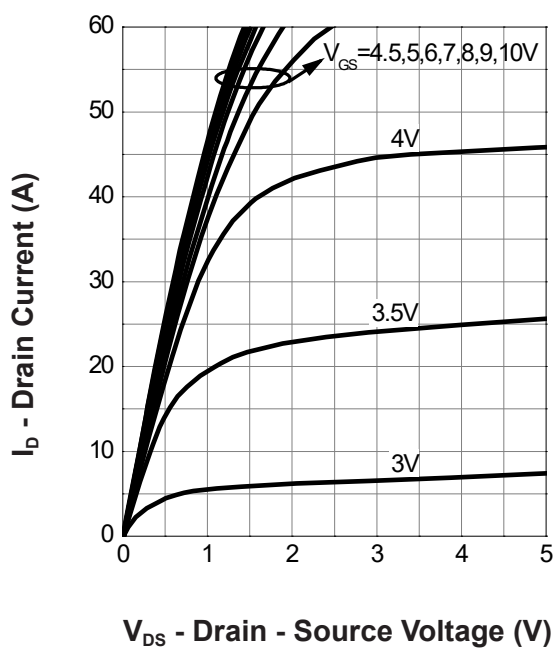
Gate-Source On Resistance



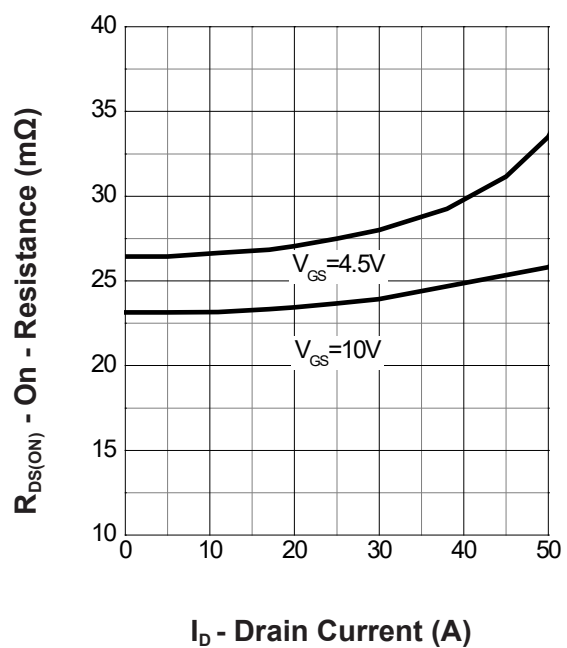
Gate Threshold Voltage



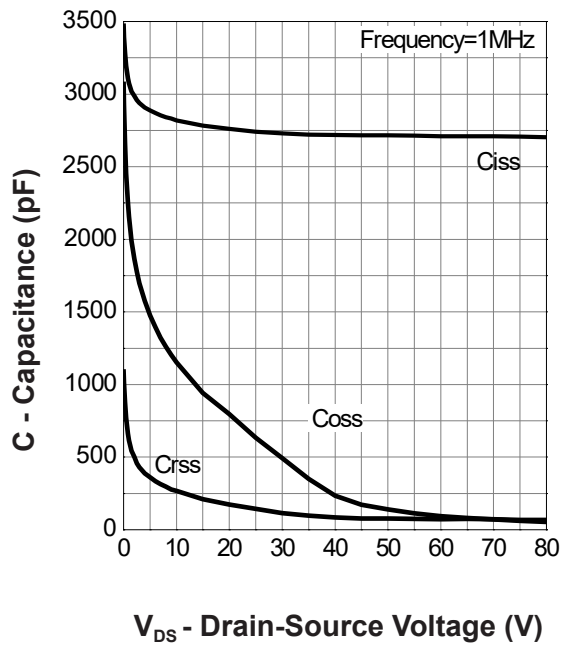
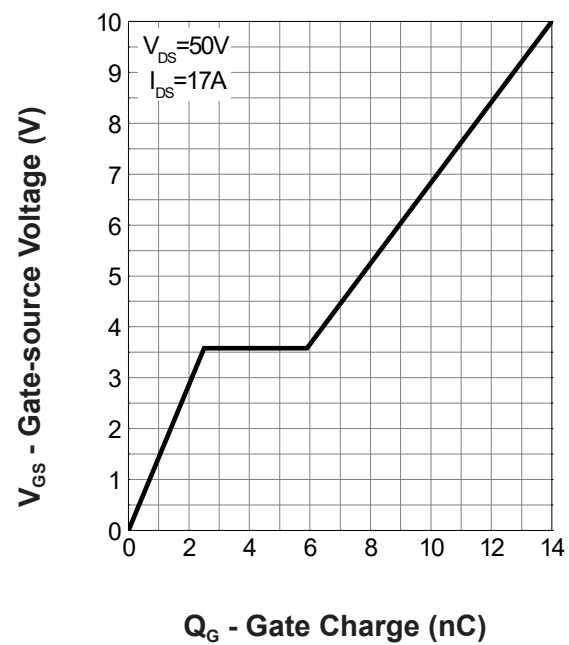
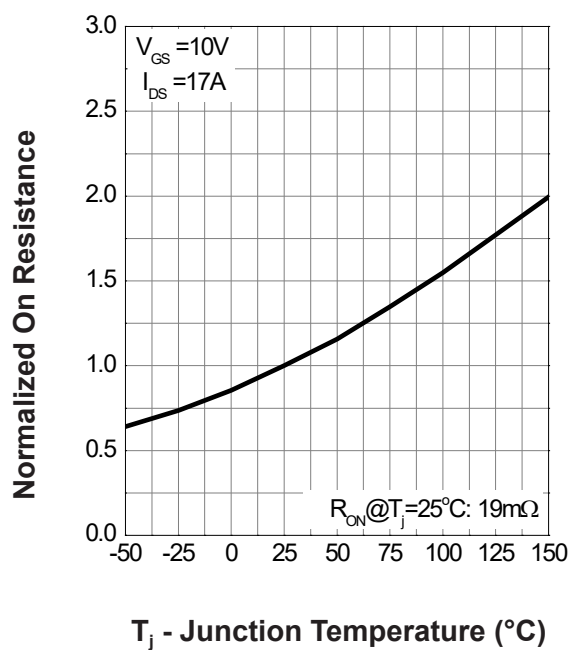
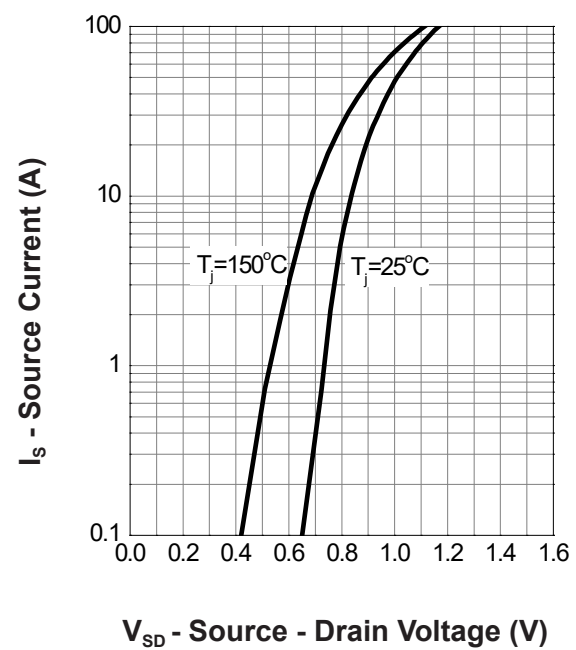
Output Characteristics



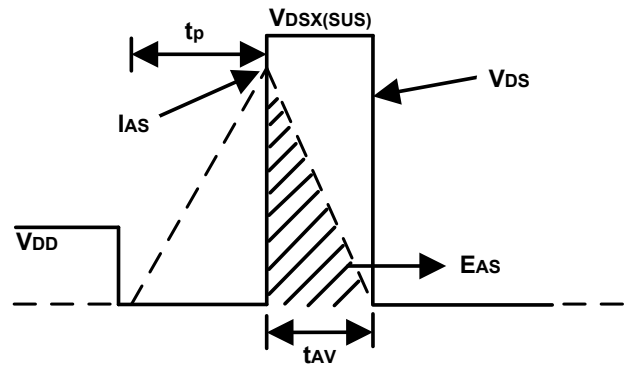
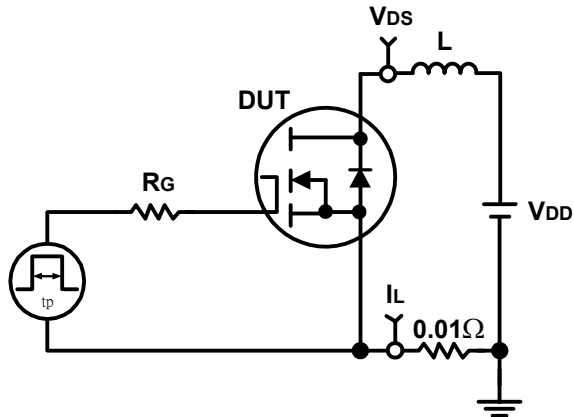
Drain-Source On Resistance



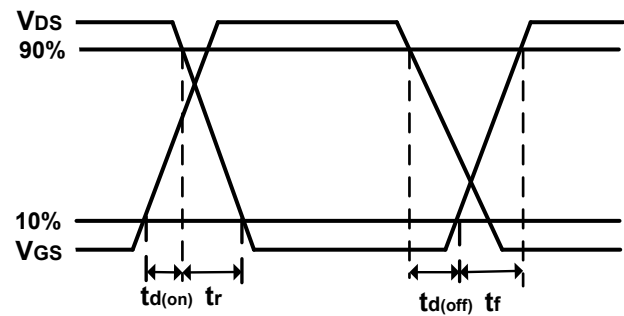
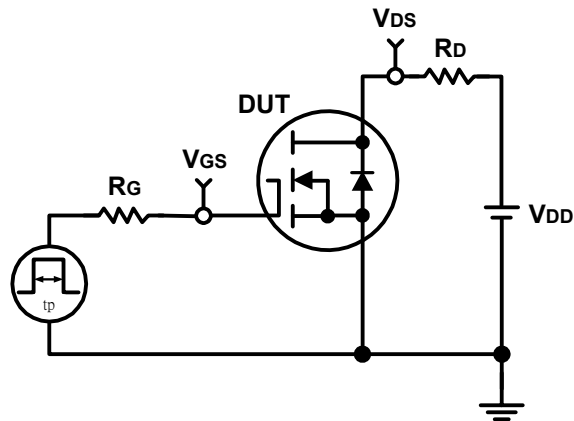
Typical Operating Characteristics(Cont.)

Capacitance

Gate Charge

Drain-Source On Resistance

Source-Drain Diode Forward


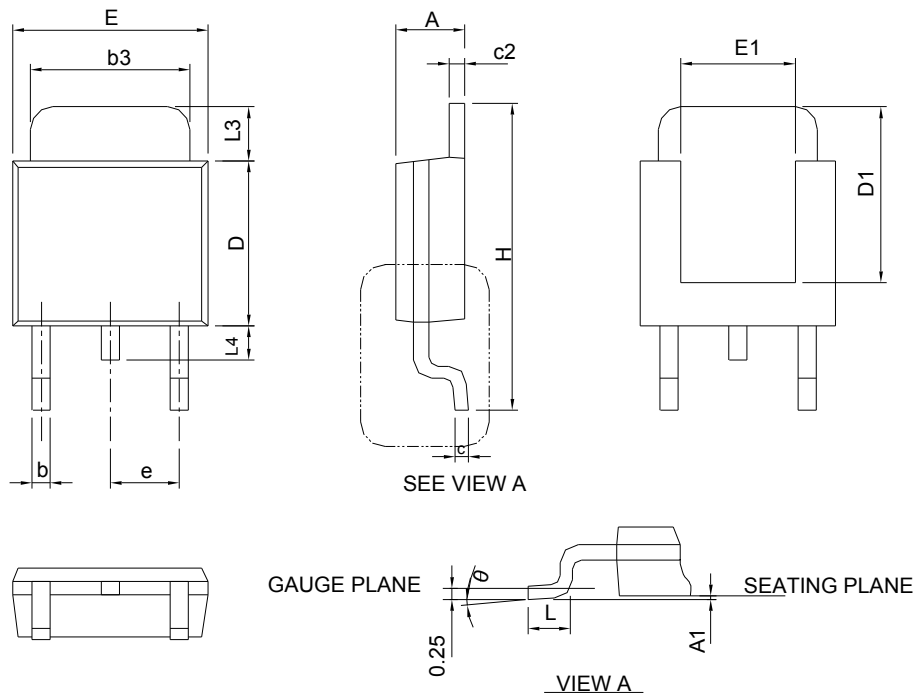
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



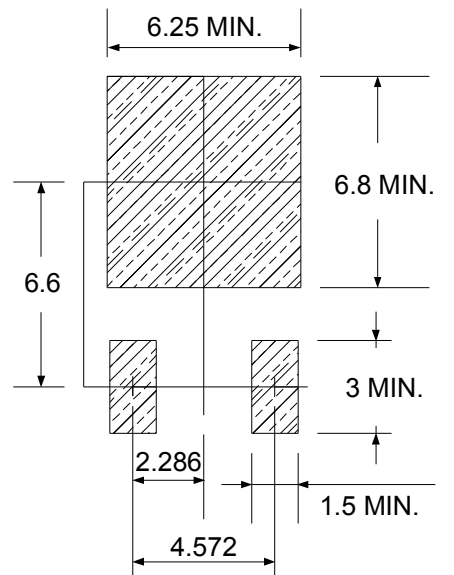
Package Information

TO-252-2


	TO-252-2			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.39	0.086	0.094
A1	-	0.13	-	0.005
b	0.50	0.89	0.020	0.035
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.89	0.018	0.035
D	5.33	6.22	0.210	0.245
D1	4.57	6.00	0.180	0.236
E	6.35	6.73	0.250	0.265
E1	3.81	6.00	0.150	0.236
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	0.90	1.78	0.035	0.070
L3	0.89	2.03	0.035	0.080
L4	-	1.02	-	0.040
θ	0°	8°	0°	8°

Note : Follow JEDEC TO-252 .

RECOMMENDED LAND PATTERN



UNIT: mm