

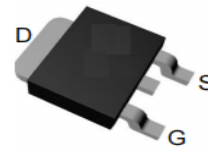
Features

- 20V/80A,
 $R_{DS(ON)} = 3.5\text{m}\Omega(\text{typ.}) @ V_{GS} = 4.5\text{V}$
 $R_{DS(ON)} = 4.5\text{m}\Omega(\text{typ.}) @ V_{GS} = 2.5\text{V}$
 $R_{DS(ON)} = 5.5\text{m}\Omega(\text{typ.}) @ V_{GS} = 1.8\text{V}$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

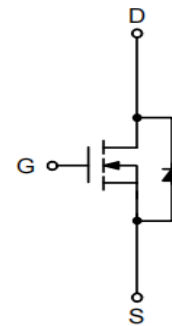
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



Top View of TO-252



N-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		20	V
V _{GSS}	Gate-Source Voltage		±12	
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	25	A
I _D ^a	Continuous Drain Current	T _C =25°C	80	A
		T _C =100°C	40	
I _{DM} ^b	Pulsed Drain Current	T _C =25°C	200	
P _D	Maximum Power Dissipation	T _C =25°C	35	W
		T _C =100°C	14	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	3.5	°C/W
R _{θJA} ^d	Thermal Resistance-Junction to Ambient	Steady State	78	°C/W
I _{AS} ^e	Avalanche Current, Single pulse (L=0.1mH)		45	A
E _{AS} ^e	Avalanche Energy, Single pulse (L=0.1mH)		100	mJ

Note a: Package is limited by 50A

Note b: Pulse width limited by max. junction temperature.

Note c: $R_{\theta JA}$ steady state=999s.

Note d: $R_{\theta JA}$ steady state=999s. $R_{\theta JA}$ is measured with the device mounted on 1in2, Fr-4 board with 2oz.Copper.

Note e: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

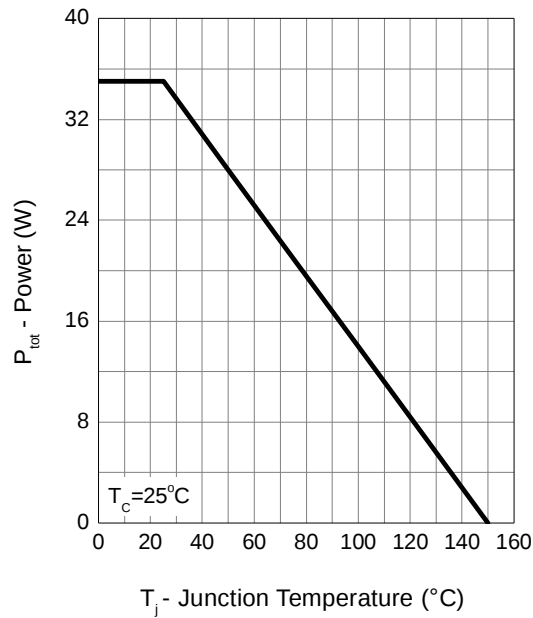
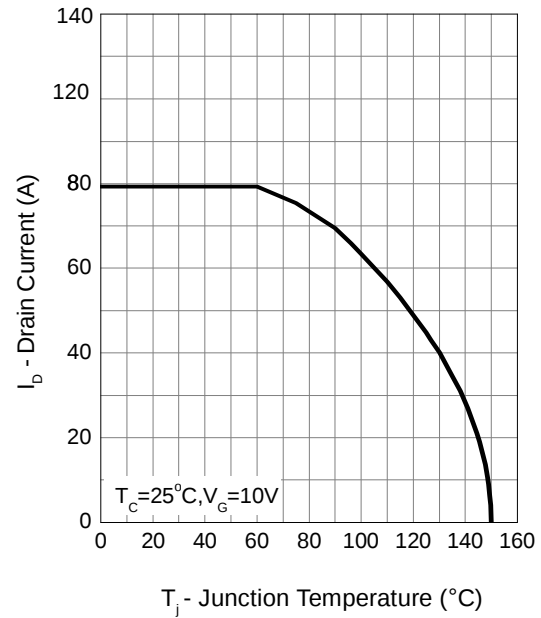
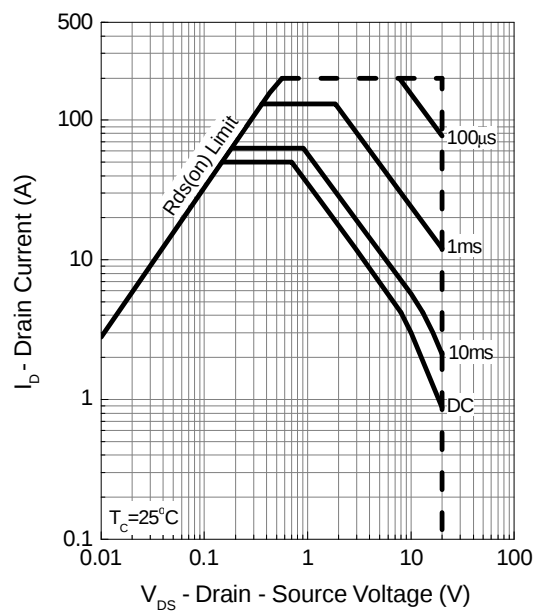
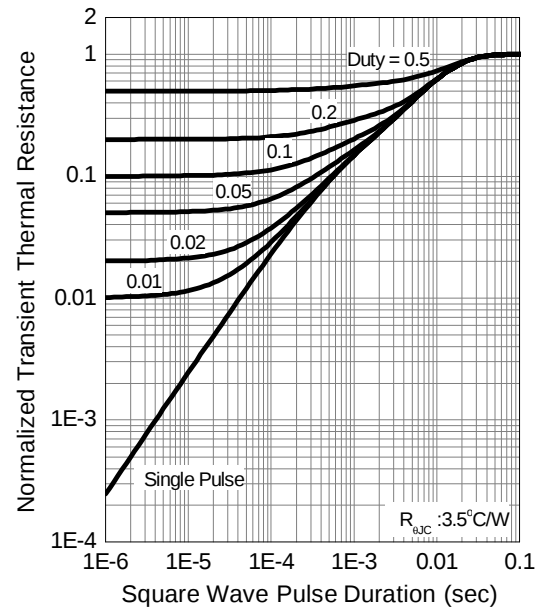
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.7	1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±10	μA
R _{DS(ON)} ^g	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =13.5A	-	3.5	4.0	mΩ
		V _{GS} =2.5V, I _{DS} =10A	-	4.5	5.0	
		V _{GS} =1.8V, I _{DS} =2A	-	5.0	7	
Gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =10A	-	34	-	S
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =2A, V _{GS} =0V	-	0.7	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =13.5A,	-	18	-	ns
Q _{rr}	Reverse Recovery Charge	dI _{SD} /dt=100A/μs	-	6.2	-	nC
Dynamic Characteristics ^g						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	2	3.6	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1.0MHz	-	1502	2910	pF
C _{oss}	Output Capacitance		-	730	-	
C _{rss}	Reverse Transfer Capacitance		-	525	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, R _L =10Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	14	26	ns
t _r	Turn-on Rise Time		-	14.5	27	
t _{d(OFF)}	Turn-off Delay Time		-	130	234	
t _f	Turn-off Fall Time		-	70	126	
Gate Charge Characteristics ^g						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _{DS} =13.5A	-	35	50	nC
Q _{gs}	Gate-Source Charge		-	4.7	-	
Q _{gd}	Gate-Drain Charge		-	11.5	-	

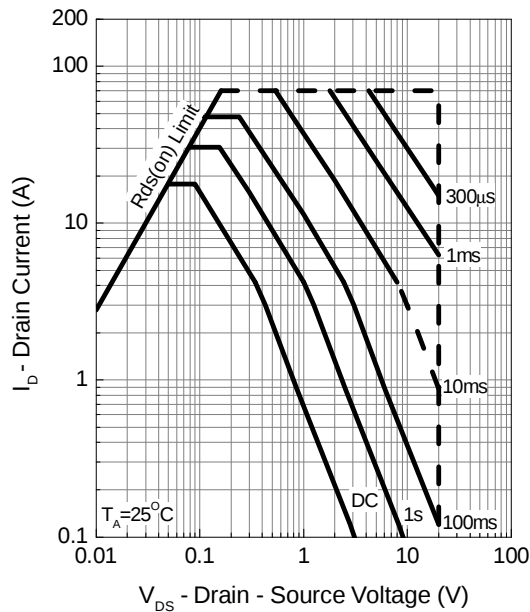
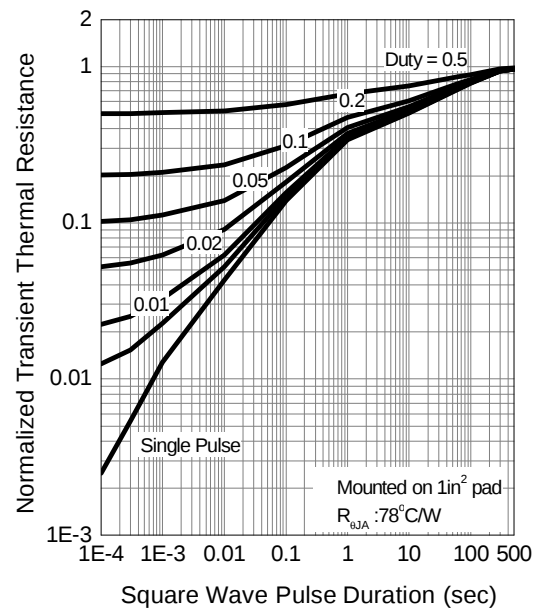
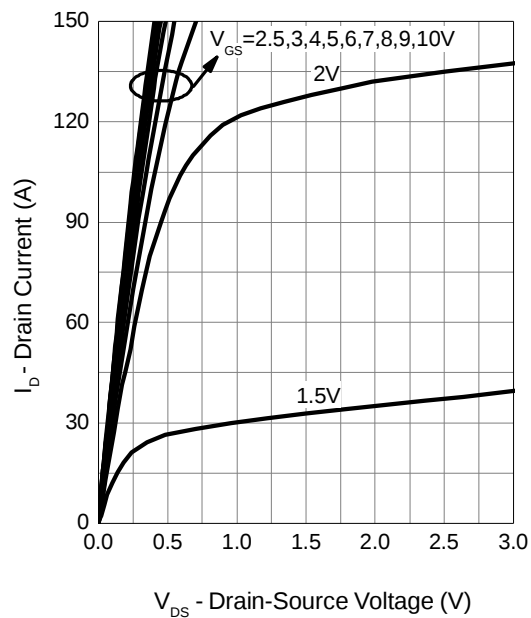
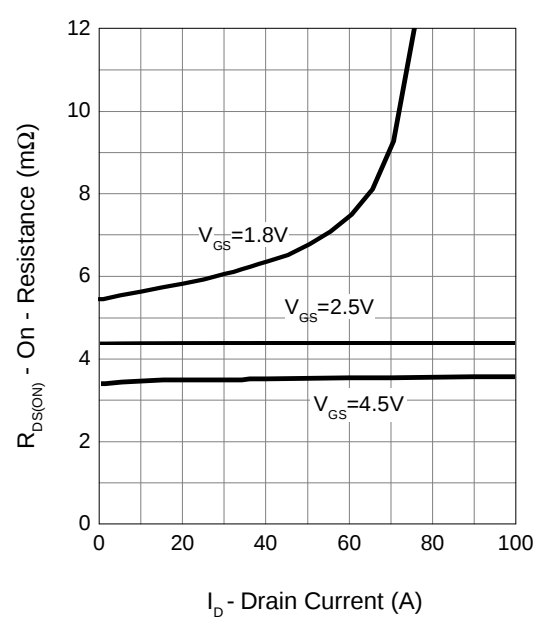
Note f: Pulse test; pulse width≤300μs, duty cycle≤2%.

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

Typical Operating Characteristics

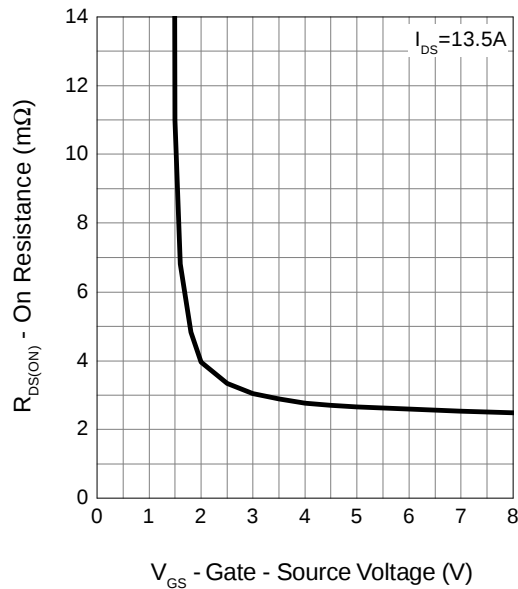
Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


Typical Operating Characteristics (Cont.)

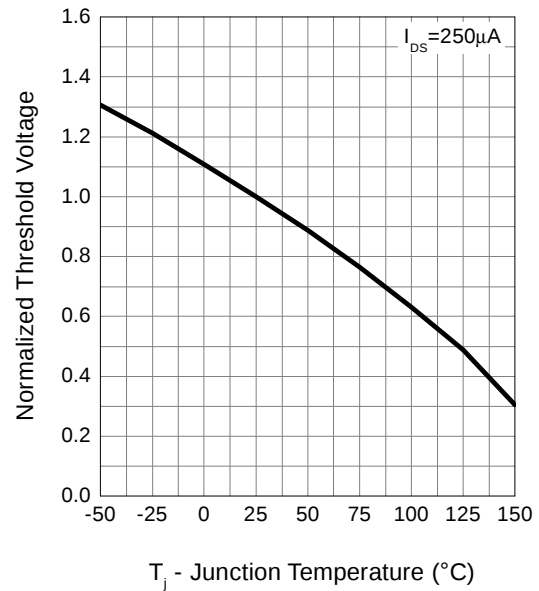
Safe Operation Area

Thermal Transient Impedance

Output Characteristics

Drain-Source On Resistance


Typical Operating Characteristics (Cont.)

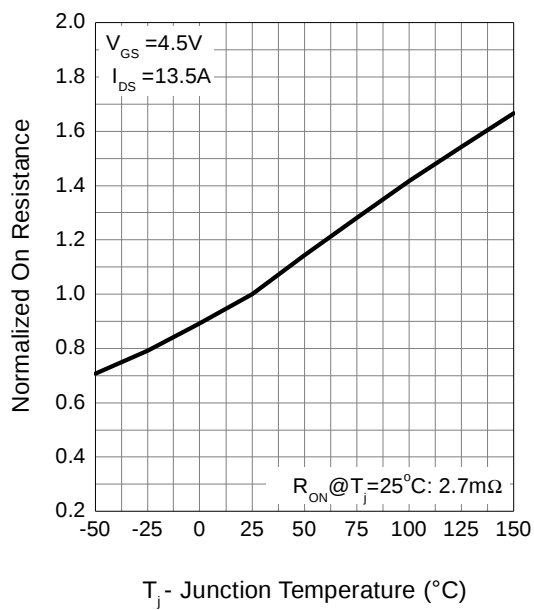
Gate-Source On Resistance



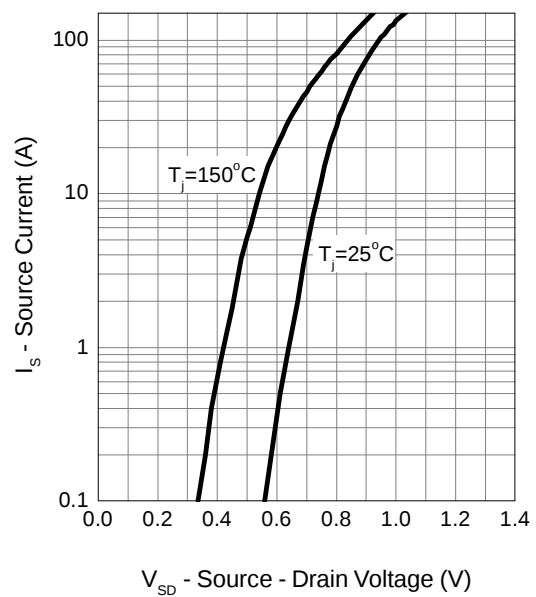
Gate Threshold Voltage



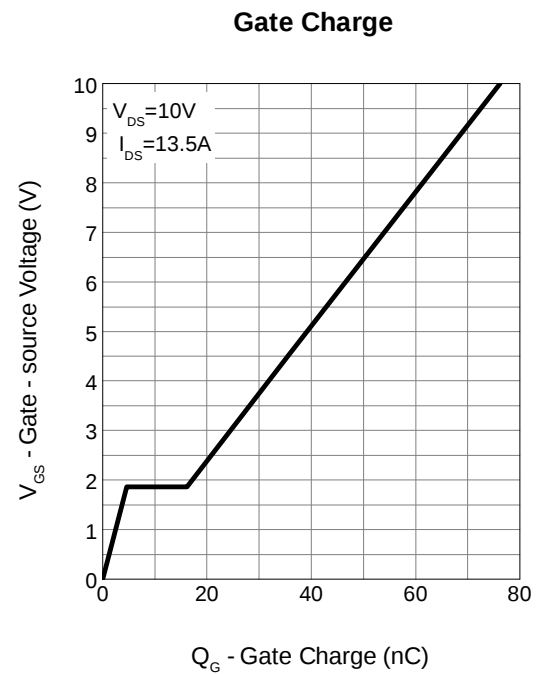
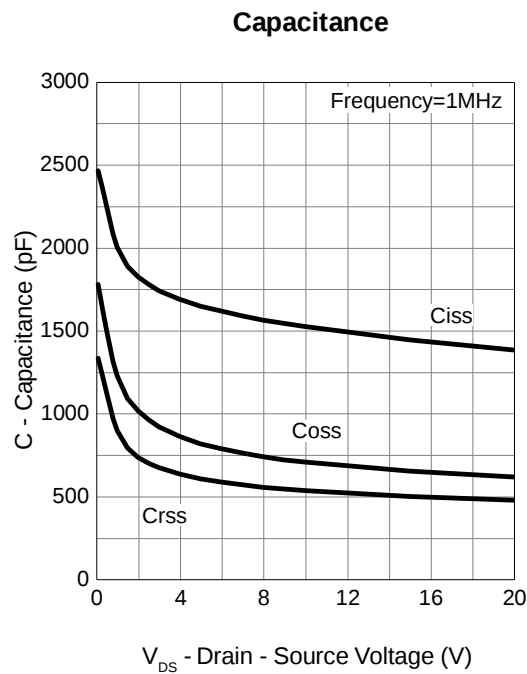
Drain-Source On Resistance



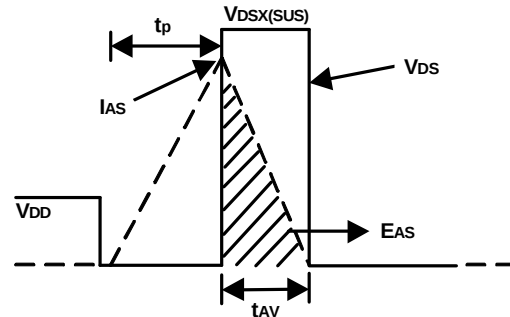
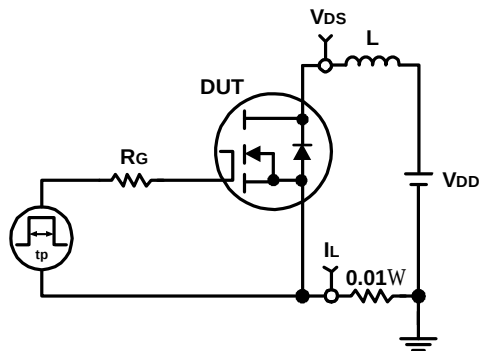
Source-Drain Diode Forward



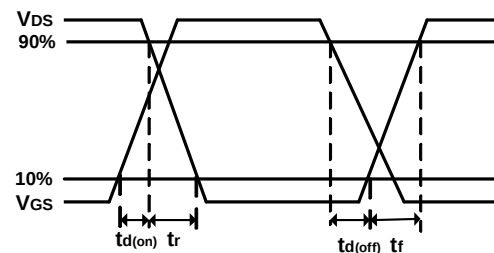
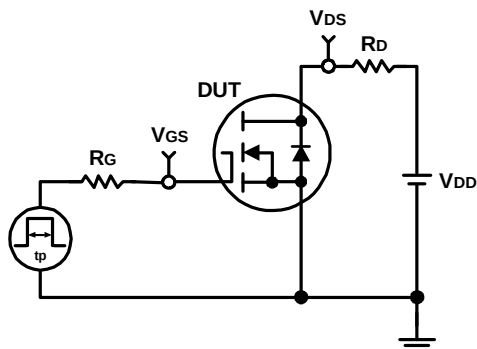
Typical Operating Characteristics (Cont.)



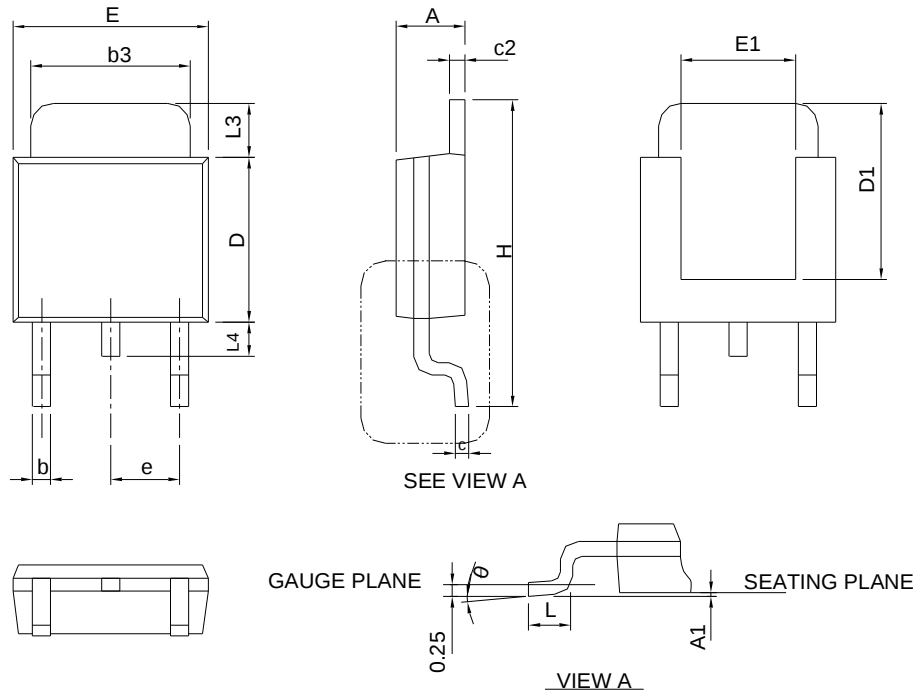
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Package Information



DIMENSIONS	TO-252			
	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

