

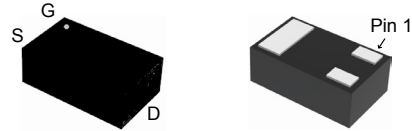
Features

- 20V/1A
 $R_{DS(ON)}=125m\Omega(\text{typ.})@V_{GS}=4.5V$
 $R_{DS(ON)}=190m\Omega(\text{typ.})@V_{GS}=2.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- Moisture Sensitivity Level MSL1 (per JEDEC J-STD-020D)
- ESD protection

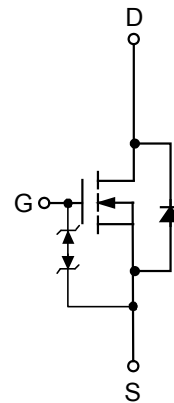
Applications

- High Speed and Analog Switching Applications.
- Low voltage drive (2.5V drive).
- Power Management in Notebook Computer.
- Portable Equipment and Battery Powered Systems.

Pin Description



DFN0.6x1-3_EP



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		20	V
V _{GSS}	Gate-Source Voltage		±10	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _A =25°C	1	A
I _D	Continuous Drain Current	T _A =25°C	1	A
		T _A =70°C	0.75	
I _{DM} ^a	Pulsed Drain Current	T _A =25°C	3	
P _D	Maximum Power Dissipation	T _A =25°C	0.98	W
		T _A =70°C	0.63	
R _{θJA} ^b	Thermal Resistance-Junction to Ambient	t ≤ 10s	96	°C/W
		Steady state	127	

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

Note b : Surface mounted on 1in^2 pad area.

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

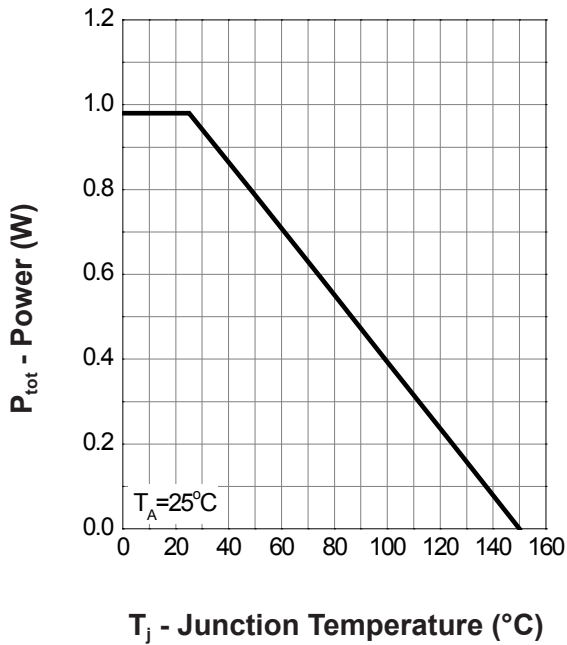
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V T _J =85°C	-	-	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.4	0.75	1.1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±10V, V _{DS} =0V	-	-	±10	uA
R _{DS(ON)} ^c	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =0.4A T _J =125°C	-	125 195	190 -	mΩ
		V _{GS} =2.5V, I _{DS} =0.3A	-	190	250	
Gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =0.4A	-	1.6	-	S
Diode Characteristics						
V _{SD} ^c	Diode Forward Voltage	I _{SD} =0.4A, V _{GS} =0V	-	0.7	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =1A, dI _{SD} /dt=100A/μs	-	7.6	-	ns
t _a	Charge Time		-	3.2	-	
t _b	Discharge Time		-	4.4	-	
Q _{rr}	Reverse Recovery Charge		-	1.6	-	nC
Dynamic Characteristics ^d						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1.0MHz	-	43	56	pF
C _{oss}	Output Capacitance		-	15	-	
C _{rss}	Reverse Transfer Capacitance		-	5	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, R _L =10Ω, I _{DS} =1A, V _{GEN} =4.5V, R _G =6Ω	-	2	4	ns
t _r	Turn-on Rise Time		-	14	26	
t _{d(OFF)}	Turn-off Delay Time		-	35	44	
t _f	Turn-off Fall Time		-	29	53	
Gate Charge Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _{DS} =1A	-	1.1	-	nC
Q _{gth}	Threshold Gate Charge		-	0.1	-	
Q _{gs}	Gate-Source Charge		-	0.24	-	
Q _{gd}	Gate-Drain Charge		-	0.18	-	

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

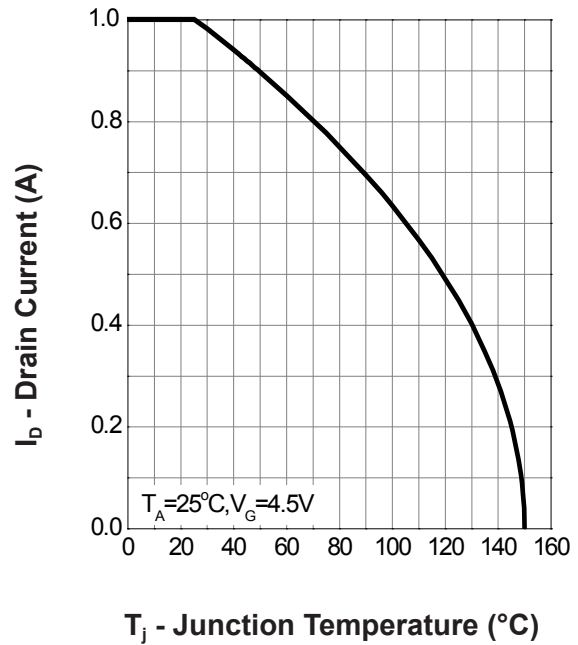
Note d : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

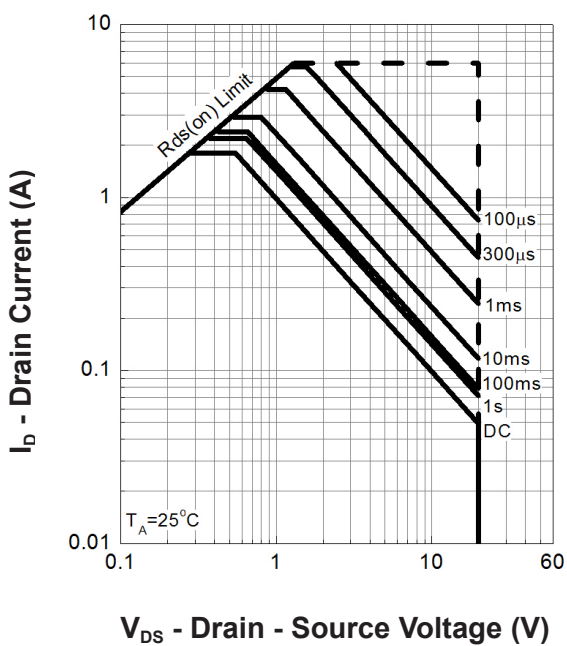
Power Dissipation



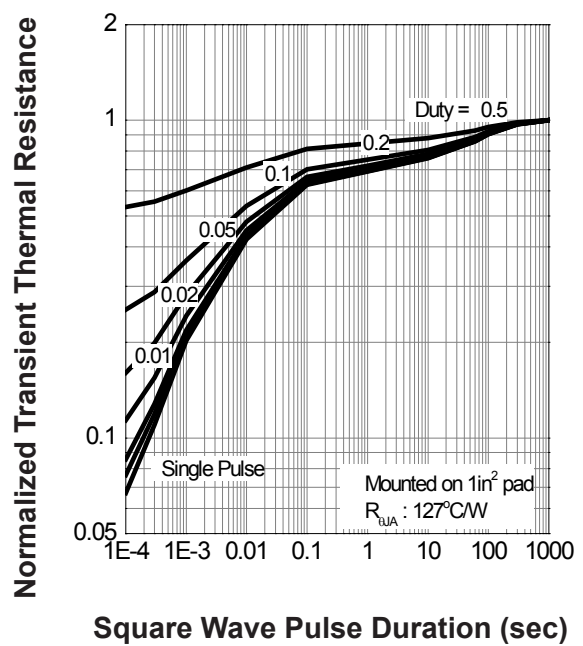
Drain Current



Safe Operation Area

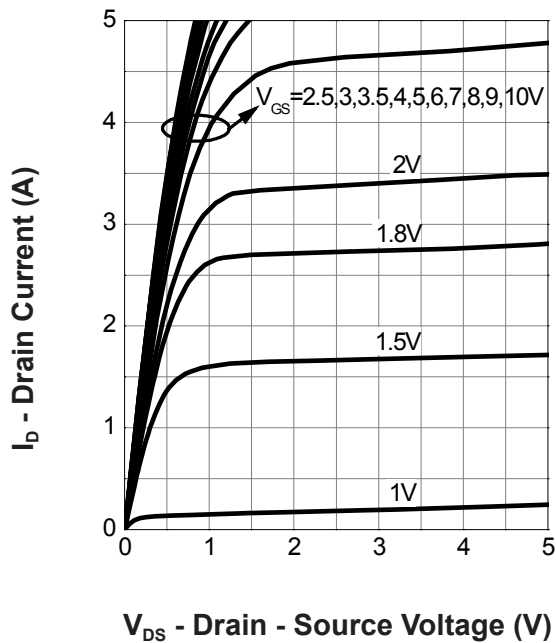


Thermal Transient Impedance

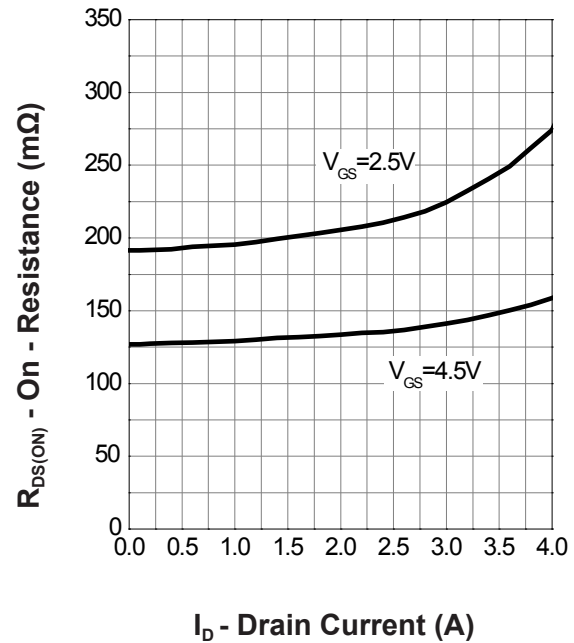


Typical Operating Characteristics(Cont.)

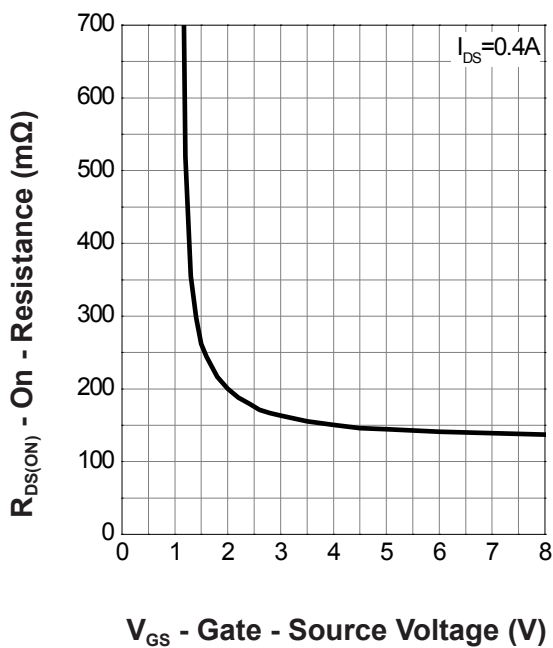
Output Characteristics



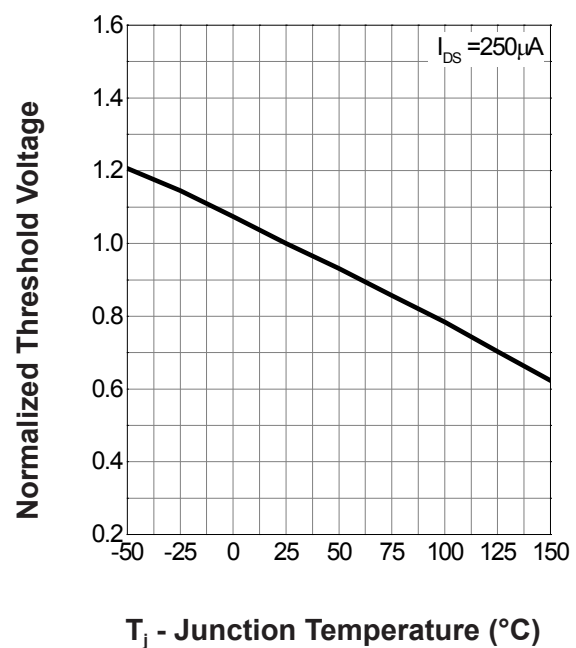
Drain-Source On Resistance



Gate-Source On Resistance

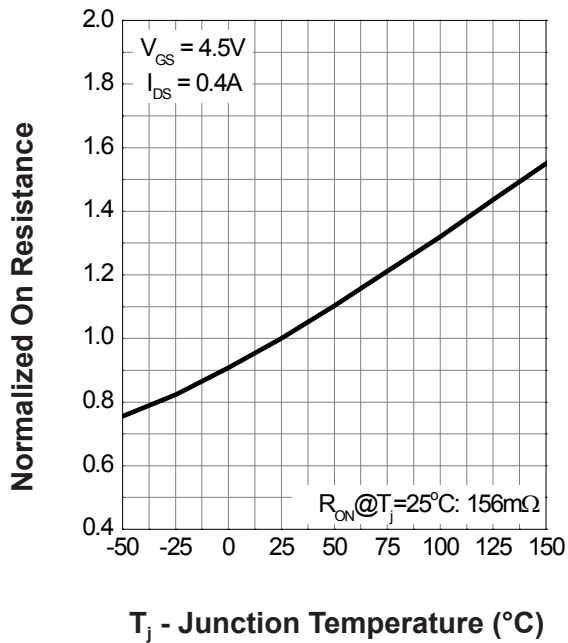


Gate Threshold Voltage

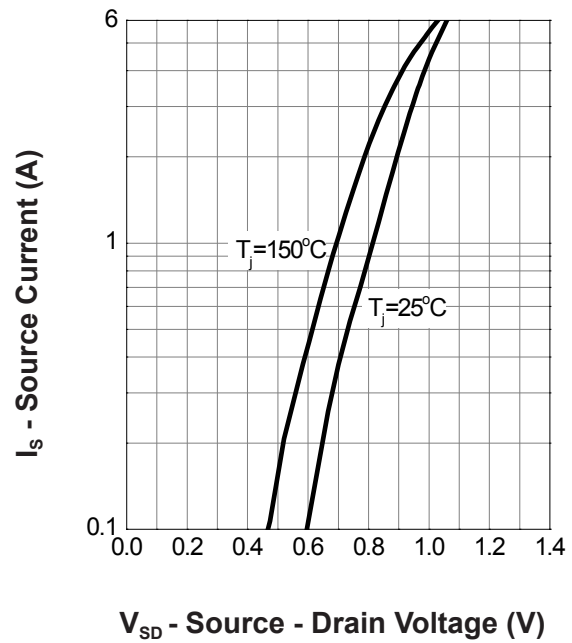


Typical Operating Characteristics(Cont.)

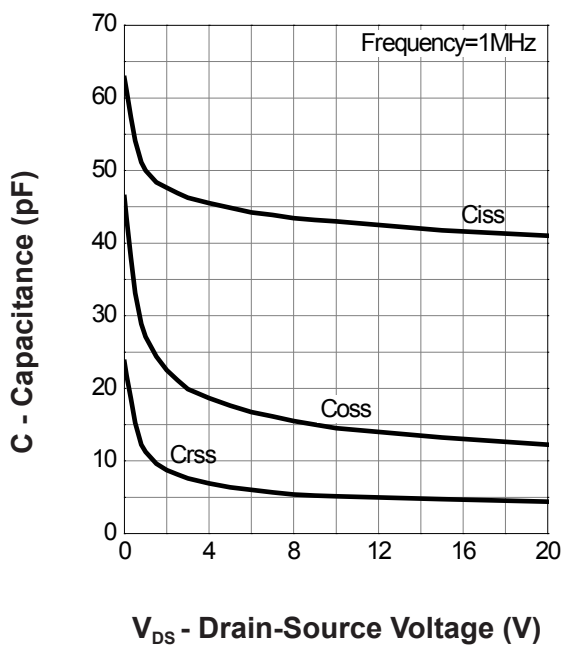
Drain-Source On Resistance



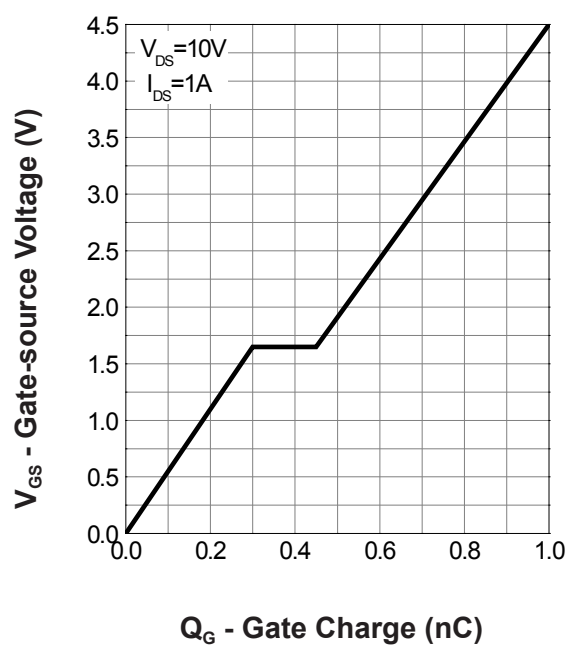
Source-Drain Diode Forward



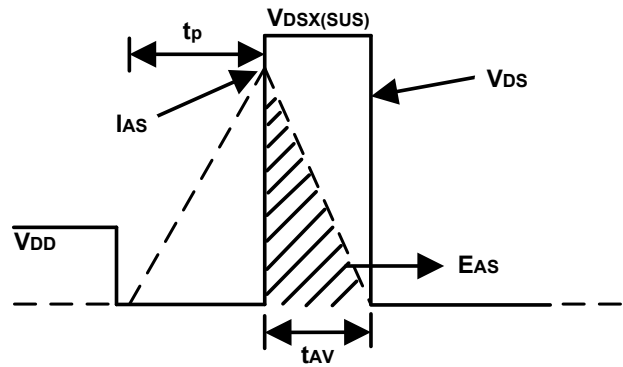
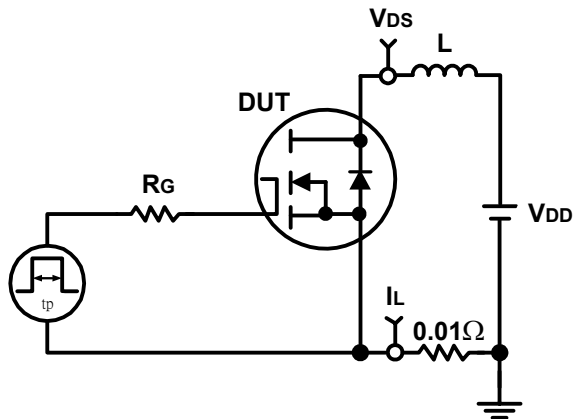
Capacitance



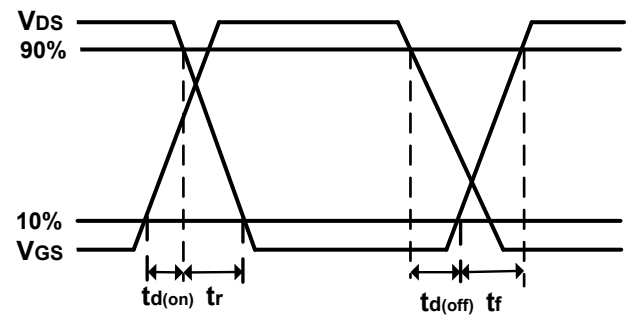
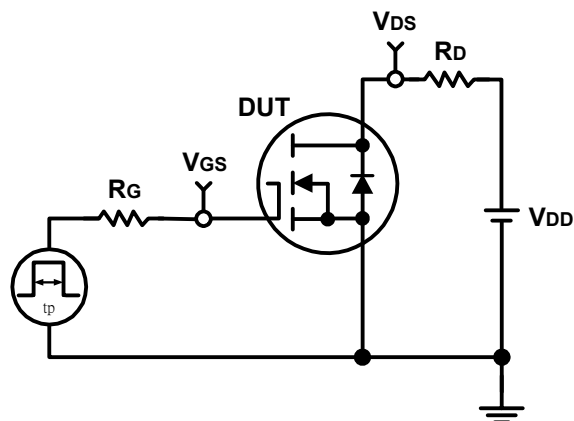
Gate Charge

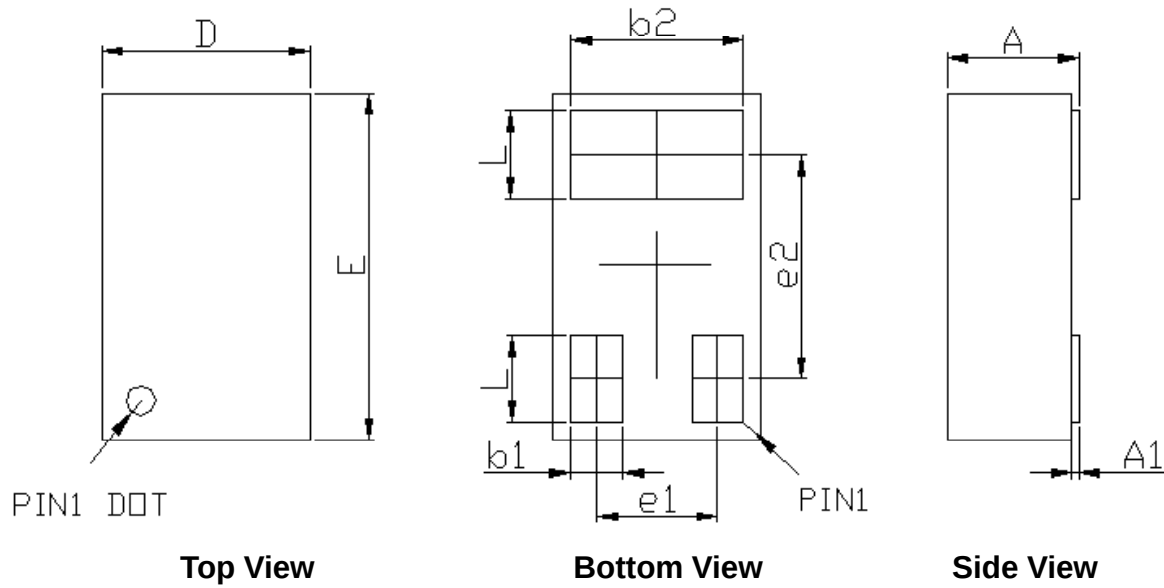


Avalanche Test Circuit and Waveforms



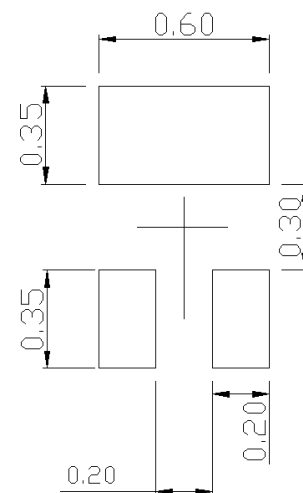
Switching Time Test Circuit and Waveforms





SYMBOLS	DFN0.6x1.0A-3_EP1			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.31	0.40	0.012	0.016
A1	0.00	0.05	0.000	0.002
b1	0.10	0.20	0.004	0.008
b2	0.45	0.55	0.018	0.022
D	0.600 BSC		0.024 BSC	
E	1.00 BSC		0.040 BSC	
e1	0.350 BSC		0.014 BSC	
e2	0.650 BSC		0.026 BSC	
L	0.20	0.30	0.008	0.012

RECOMMENDED LAND PATTERN



UNIT: mm