

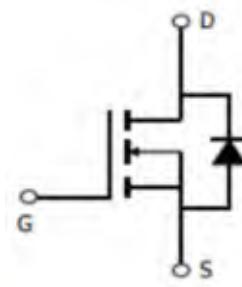
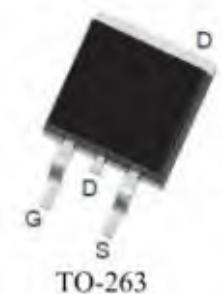


Features

- 75V/110A
 $R_{DS(ON)} = 5.5\text{m}\Omega$ (Typ.)@ $V_{GS}=10\text{V}$
- Super High Dense Cell Design
- Ultra Low On-Resistance
- 100% avalanche tested
- Lead Free and Green Devices Available
- (RoHS Compliant)

Applications

- DC-DC Converters and Off-line UPS



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	75	V
V_{GSS}	Gate-Source Voltage	± 25	
T_J	Maximum Junction Temperature	175	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
I_S	Diode Continuous Forward Current $T_C=25^\circ\text{C}$	110 ^①	A
Mounted on Large Heat Sink			
I_{DP}	300 μs Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 440 ^②	A
I_D	Continuous Drain Current($V_{GS}=10\text{V}$)	$T_C=25^\circ\text{C}$ 110 ^① $T_C=100^\circ\text{C}$ 82 ^①	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 188 $T_C=100^\circ\text{C}$ 94	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.8	$^\circ\text{C}/\text{W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{③}$	Avalanche Energy, Single Pulsed	400	mJ

**Electrical Characteristics** ($T_c=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}, I_{\text{DS}}=250\mu\text{A}$	75			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{\text{DS}}=75\text{V}, V_{\text{GS}}=0\text{V}$			1	μA
		$T_J=85^\circ\text{C}$			30	
$V_{\text{GS(th)}}$	Gate Threshold Voltage	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{DS}}=250\mu\text{A}$	2	3	4	V
I_{GSS}	Gate Leakage Current	$V_{\text{GS}}=\pm 25\text{V}, V_{\text{DS}}=0\text{V}$			± 100	nA
^④ $R_{\text{DS(ON)}}$	Drain-Source On-state Resistance	$V_{\text{GS}}=10\text{V}, I_{\text{DS}}=55\text{A}$		5.5	7	$\text{m}\Omega$
Diode Characteristics						
^④ V_{SD}	Diode Forward Voltage	$I_{\text{SD}}=55\text{A}, V_{\text{GS}}=0\text{V}$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{\text{SD}}=55\text{A}, dI_{\text{SD}}/dt=100\text{A}/\mu\text{s}$		32		ns
Q_{rr}	Reverse Recovery Charge			44		nC
^⑤ Dynamic Characteristics						
R_{G}	Gate Resistance	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=0\text{V}, F=1\text{MHz}$		1.2		Ω
C_{iss}	Input Capacitance	$V_{\text{GS}}=0\text{V},$		4350		pF
C_{oss}	Output Capacitance	$V_{\text{DS}}=37.5\text{V},$		450		
C_{rss}	Reverse Transfer Capacitance	$F=1.0\text{MHz}$		260		
$t_{\text{d(ON)}}$	Turn-on Delay Time	$V_{\text{DD}}=37.5\text{V}, R_{\text{L}}=0.7\Omega, I_{\text{DS}}=55\text{A}, V_{\text{GEN}}=10\text{V}, R_{\text{G}}=3.75\Omega$		22		ns
t_{r}	Turn-on Rise Time			46		
$t_{\text{d(OFF)}}$	Turn-off Delay Time			22		
t_{f}	Turn-off Fall Time			16		
^⑤ Gate Charge Characteristics						
Q_{g}	Total Gate Charge	$V_{\text{DS}}=60\text{V}, V_{\text{GS}}=10\text{V}, I_{\text{DS}}=55\text{A}$		45		nC
Q_{gs}	Gate-Source Charge			12		
Q_{gd}	Gate-Drain Charge			14		

Notes: ①Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A.

②Pulse width limited by safe operating area.

③Limited by $T_{J\text{max}}, I_{\text{AS}} = 40\text{A}, V_{\text{DD}} = 48\text{V}, R_{\text{G}} = 50\Omega$, Starting $T_J = 25^\circ\text{C}$.

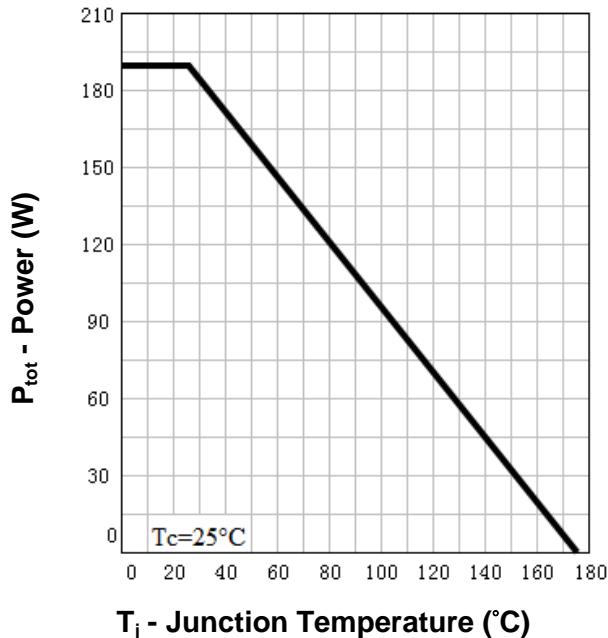
④Pulse test ; Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

⑤Guaranteed by design, not subject to production testing.

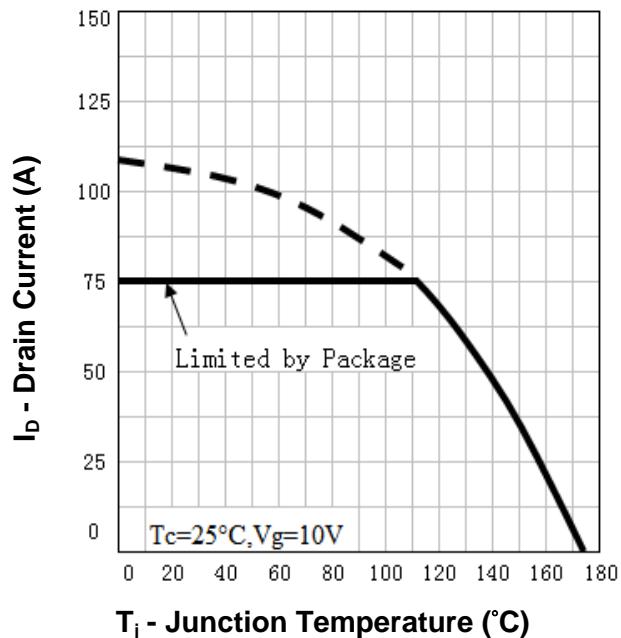


Typical Characteristics

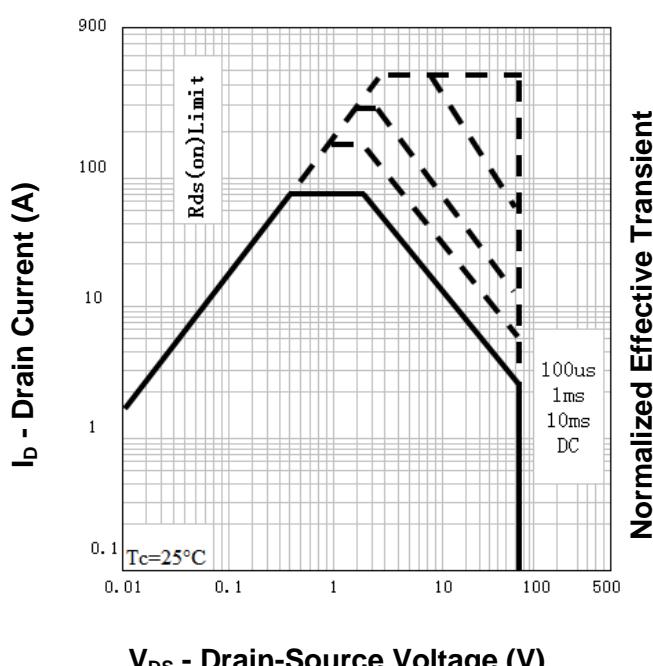
Power Dissipation



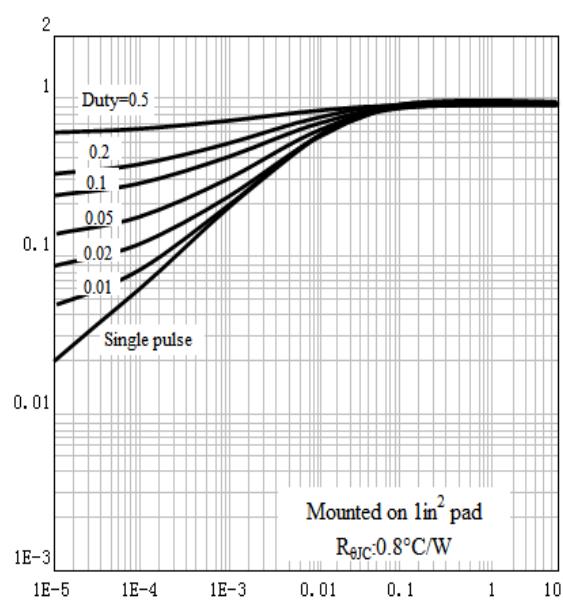
Drain Current



Safe Operation Area



Thermal Transient Impedance

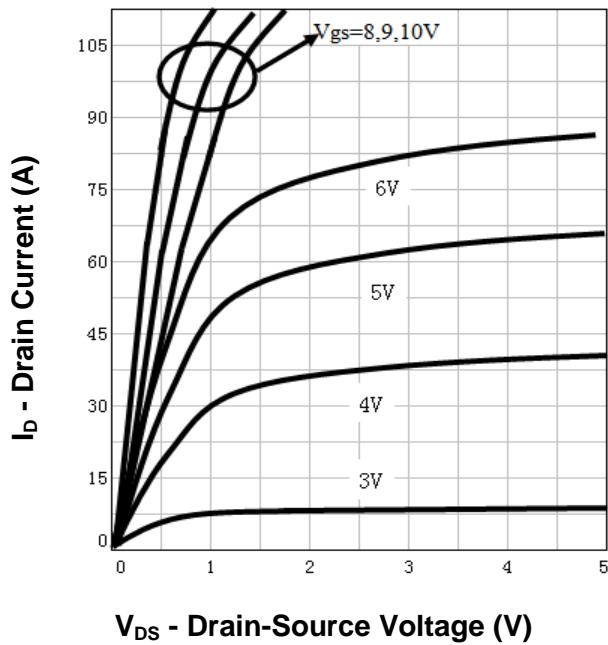
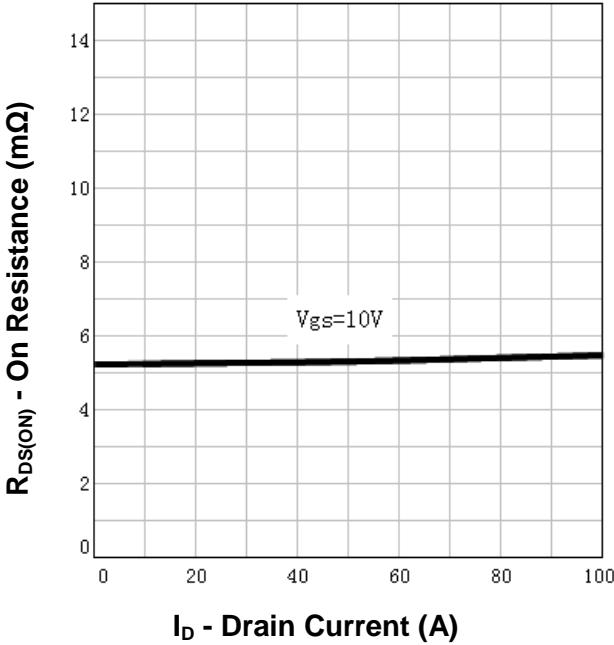
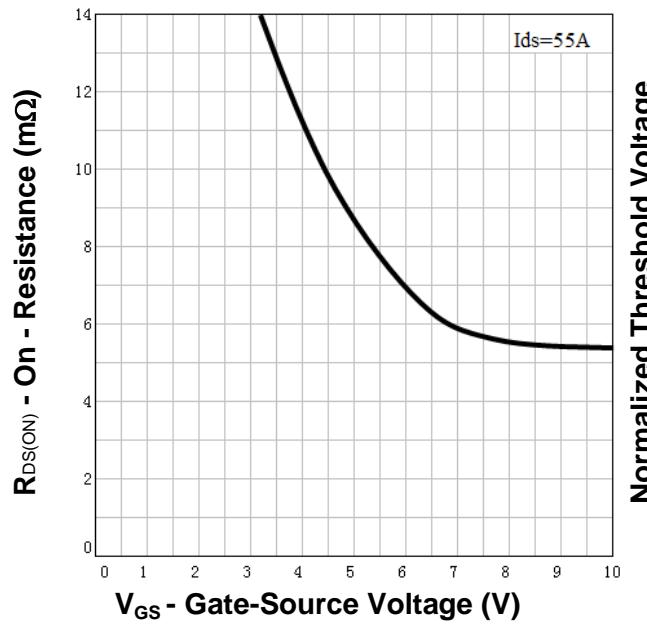
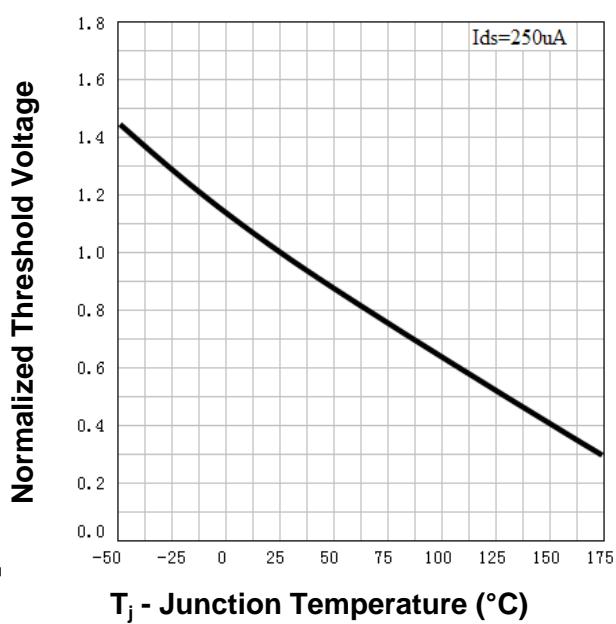


V_{DS} - Drain-Source Voltage (V)

Square Wave Pulse Duration (sec)



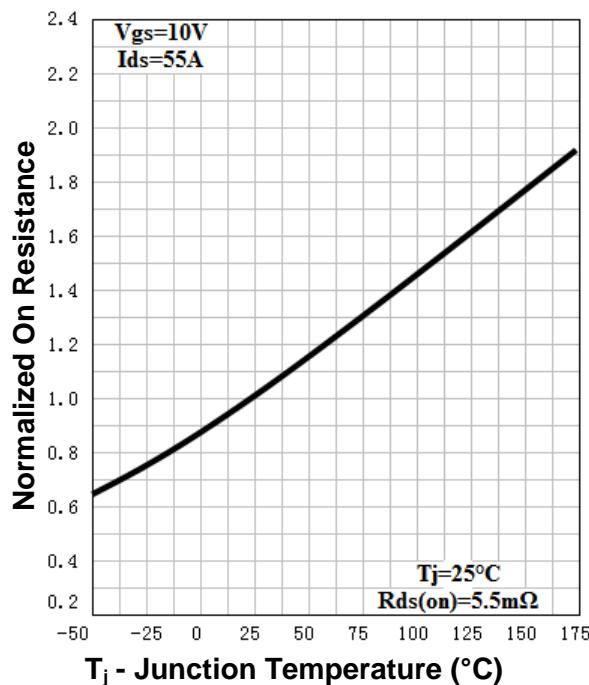
Typical Characteristics

Output Characteristics**Drain-Source On Resistance****Drain-Source On Resistance****Gate Threshold Voltage**

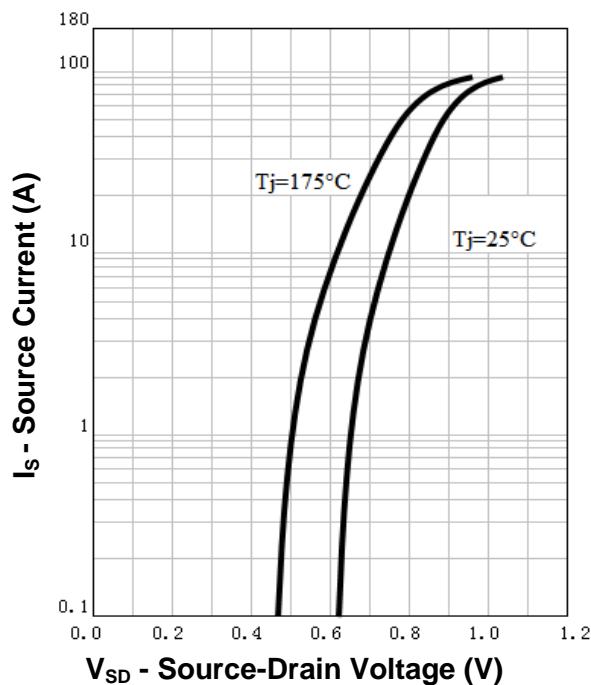


Typical Characteristics

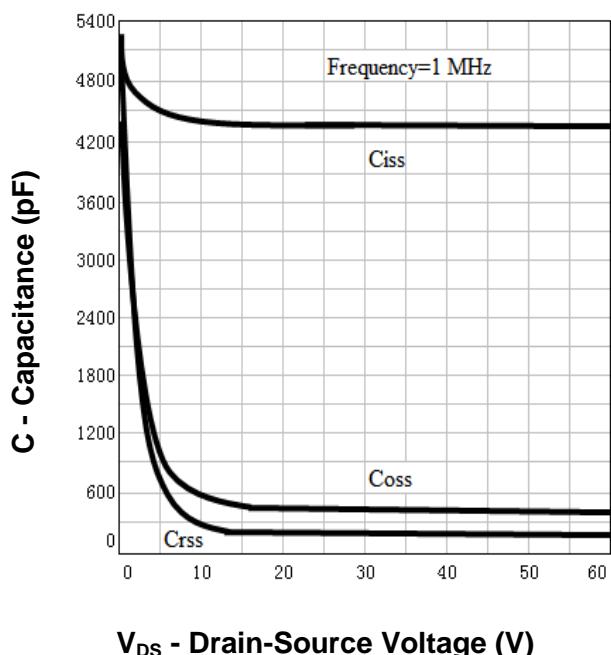
Drain-Source On Resistance



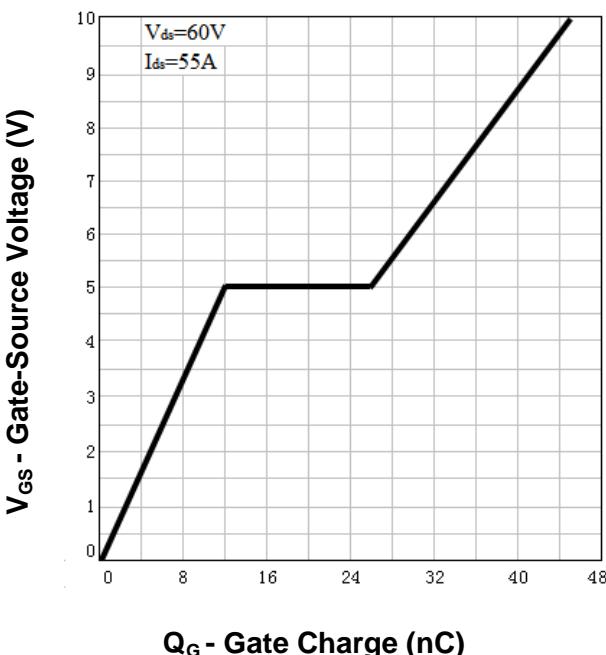
Source-Drain Diode Forward



Capacitance

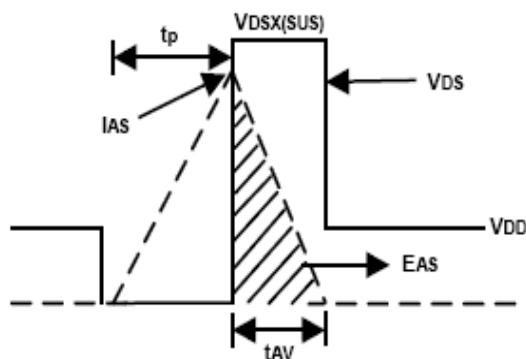
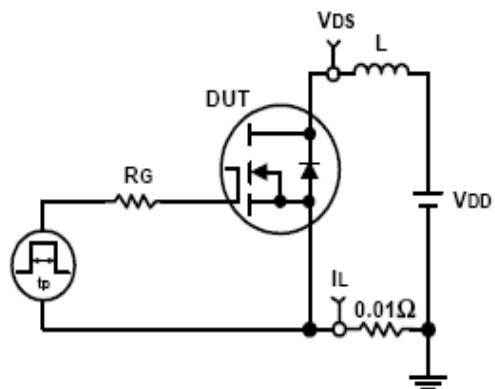


Gate Charge

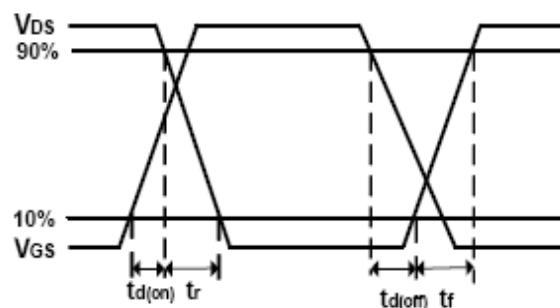
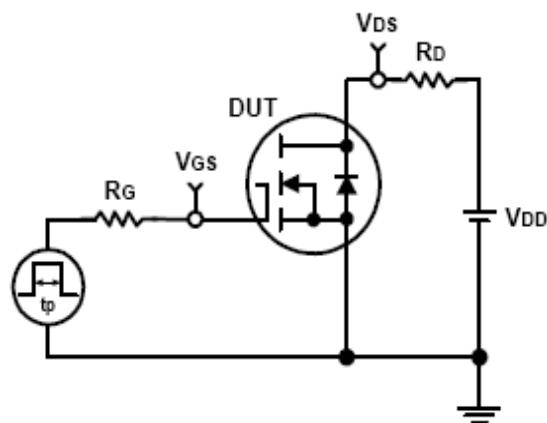




Avalanche Test Circuit and Waveforms



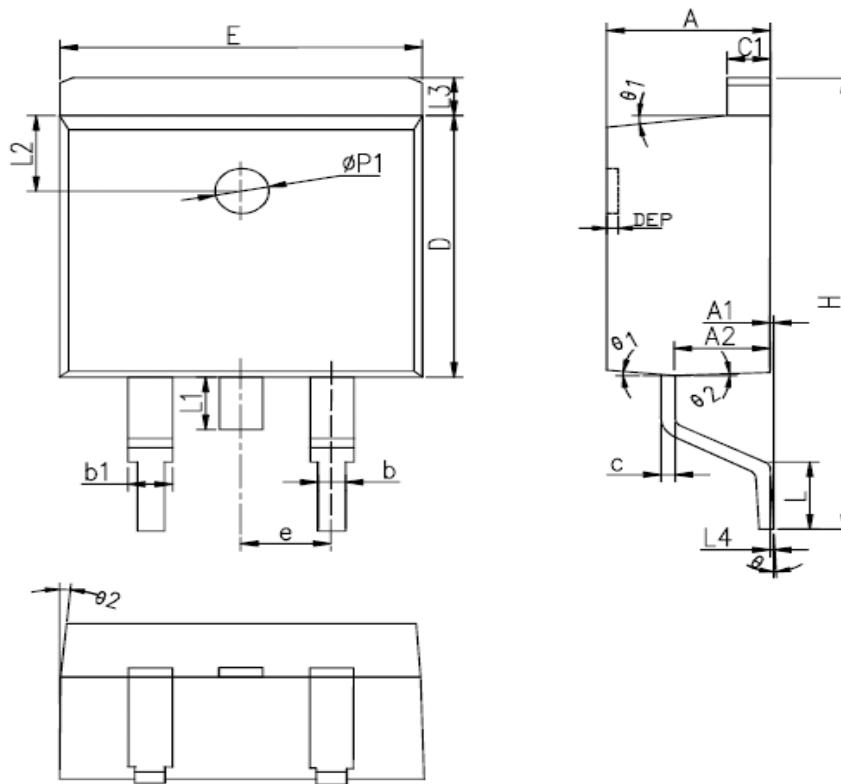
Switching Time Test Circuit and Waveforms





Package Information

TO-263-2L



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185	L	2.00	2.30	2.60	0.079	0.090	0.102
A1	0	0.10	0.25	0	0.004	0.010	L3	1.17	1.27	1.40	0.046	0.050	0.055
A2	2.59	2.69	2.79	0.102	0.106	0.110	L1	-	-	1.70	-	-	0.067
b	0.77	-	0.90	0.030	-	0.035	L4	0.25BSC			0.01BSC		
b1	1.23	-	1.36	0.048	-	0.052	L2	2.50REF.			0.098REF.		
c	0.34	-	0.47	0.013	-	0.019	θ	0°	-	8°	0°	-	8°
C1	1.22	-	1.32	0.048	-	0.052	θ 1	5°	7°	9°	5°	7°	9°
D	8.60	8.70	8.80	0.338	0.343	0.346	θ 2	1°	3°	5°	1°	3°	5°
E	10.00	10.16	10.26	0.394	0.4	0.404	DEP	0.05	0.10	0.20	0.002	0.004	0.008
e	2.54BSC			0.1BSC			ØP1	1.40	1.50	1.60	0.055	0.059	0.063
H	14.70	15.10	15.50	0.579	0.594	0.610							