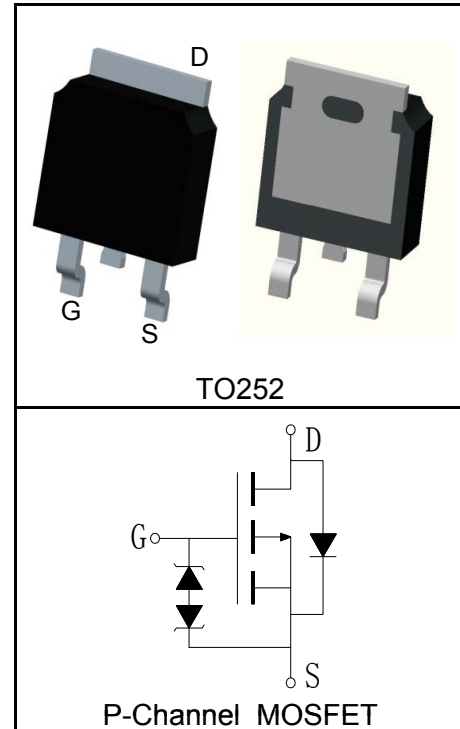


Features

- -30V/-70A,
 $R_{DS(ON)} = 5.5m\Omega(Typ.)@V_{GS}=-10V$
 $R_{DS(ON)} = 9m\Omega(Typ.)@V_{GS}=-4.5V$
- Low On-Resistance
- Super High Dense Cell Design
- ESD Protected
- 100% Avalanche Tested
- 175°C Operating Temperature
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description



Applications

- Power Management
- Load Switching

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 20	
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	$T_C=25^\circ\text{C}$ -70	A
Mounted on Large Heat Sink			
$I_{DP}^{(1)}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ -280	A
$I_D^{(2)}$	Continuous Drain Current($V_{GS}=-10V$)	$T_C=25^\circ\text{C}$ -70	A
		$T_C=100^\circ\text{C}$ -49	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 90	W
		$T_C=100^\circ\text{C}$ 45	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.65	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	100	$^\circ\text{C}/\text{W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{(3)}$	Avalanche Energy, Single Pulsed	110	mJ

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

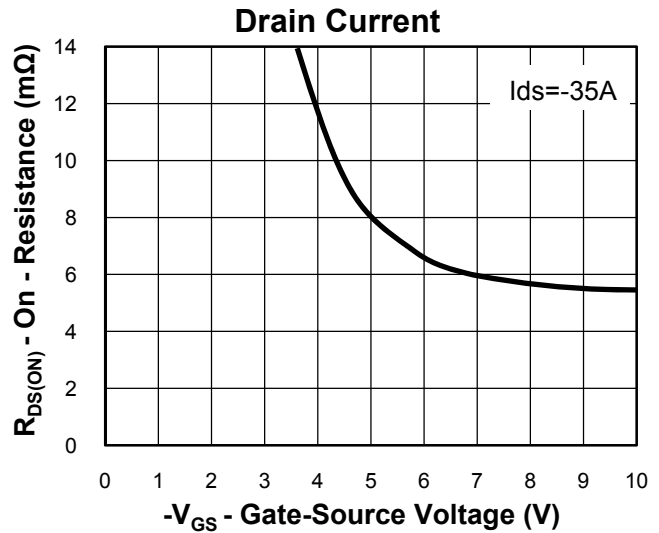
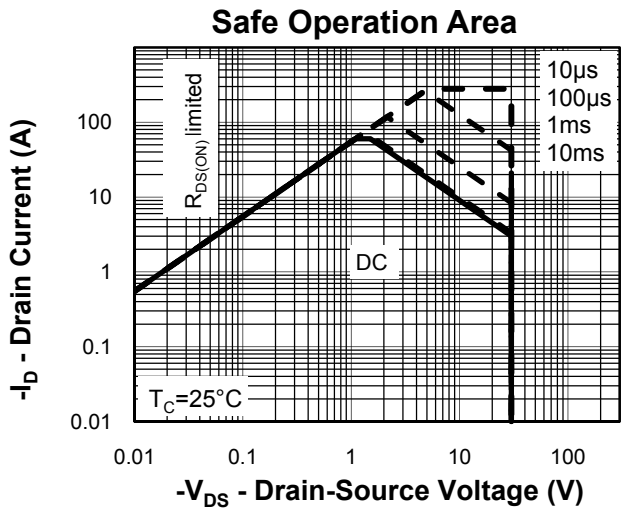
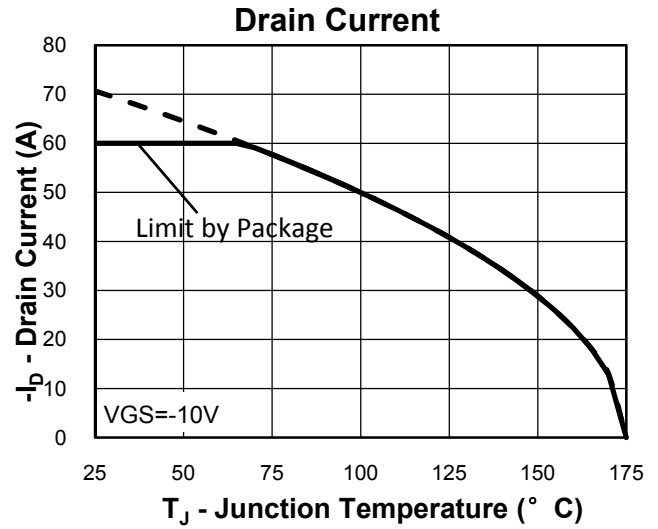
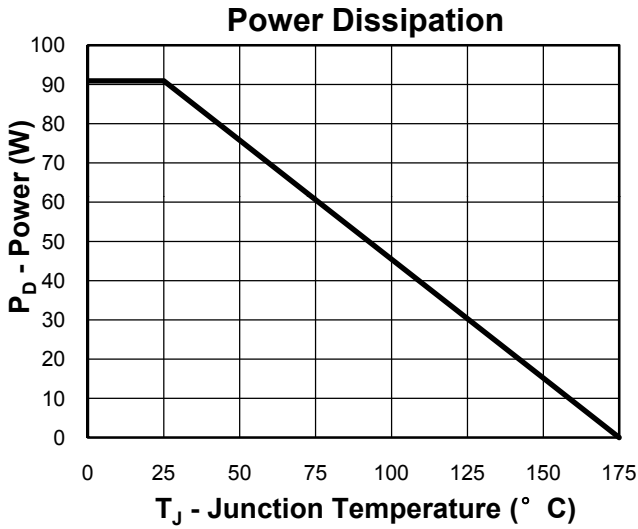
Symbol	Parameter	Test Condition	RU30L70L			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$			-1	μA
		$T_J=125^\circ C$			-30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1		-2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 10	μA
$R_{DS(ON)}^{(4)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_{DS}=-35A$		5.5	6.5	$m\Omega$
		$V_{GS}=-4.5V, I_{DS}=-28A$		9	11	$m\Omega$
Diode Characteristics						
$V_{SD}^{(4)}$	Diode Forward Voltage	$I_{SD}=-35A, V_{GS}=0V$			-1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=-35A, dI_{SD}/dt=100A/\mu s$		89		ns
Q_{rr}	Reverse Recovery Charge			55		nC
Dynamic Characteristics ⁽⁵⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		3.6		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-15V,$ Frequency=1.0MHz		4680		μF
C_{oss}	Output Capacitance			505		
C_{rss}	Reverse Transfer Capacitance			320		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-15V, I_{DS}=-35A,$ $V_{GEN}=-10V, R_G=6\Omega$		35		ns
t_r	Turn-on Rise Time			66		
$t_{d(OFF)}$	Turn-off Delay Time			74		
t_f	Turn-off Fall Time			30		
Gate Charge Characteristics ⁽⁵⁾						
Q_g	Total Gate Charge	$V_{DS}=-24V, V_{GS}=-10V,$ $I_{DS}=-35A$		86		nC
Q_{gs}	Gate-Source Charge			20		
Q_{gd}	Gate-Drain Charge			25		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ Limited by $T_{Jmax}, I_{AS}=-21A, V_{DD}=-24V, R_G=50\Omega$, Starting $T_J=25^\circ C$.
 - ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

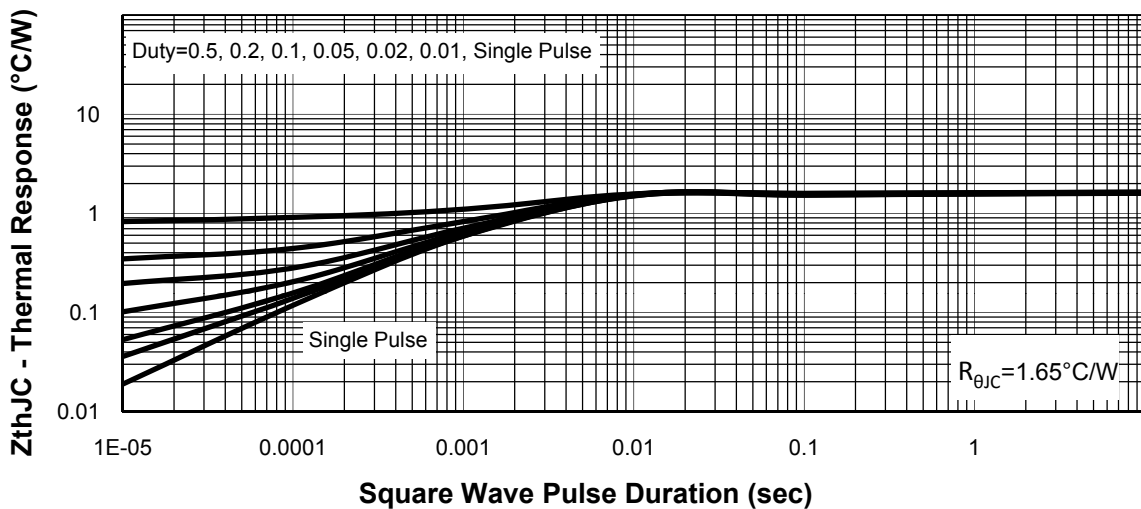
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU30L70L	RU30L70L	TO252	Tape&Reel	2500	13"	16mm

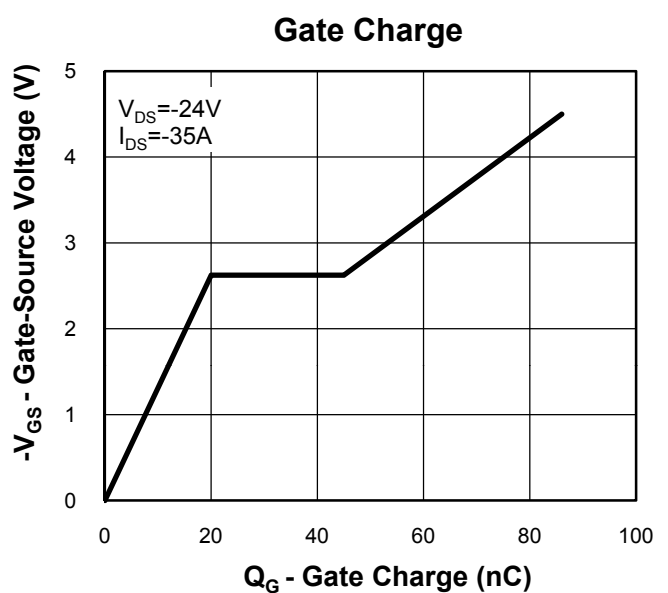
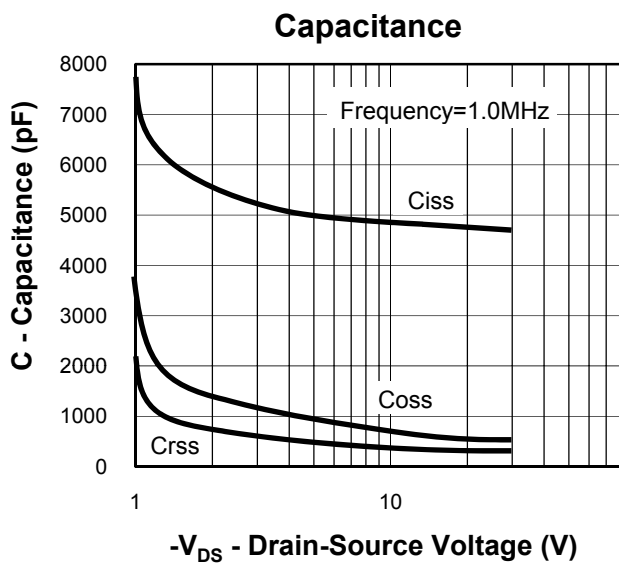
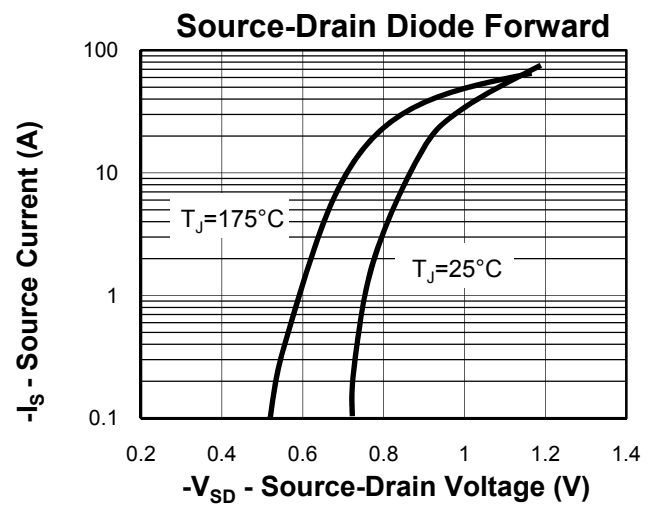
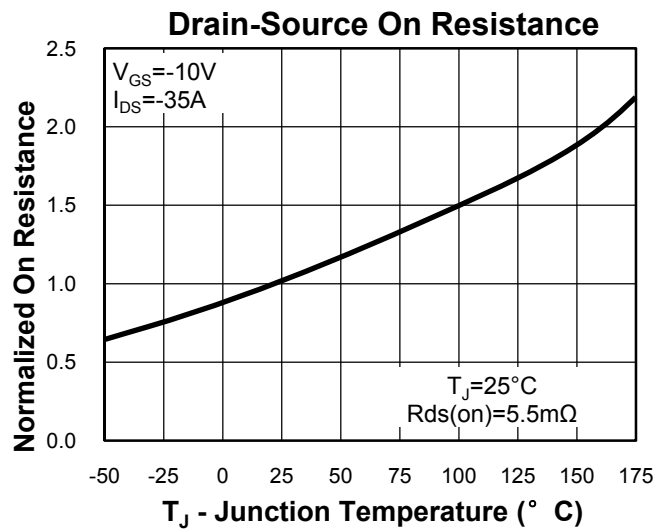
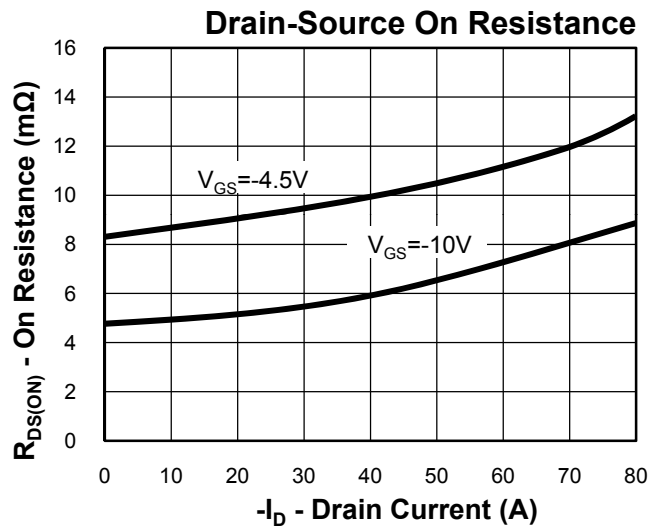
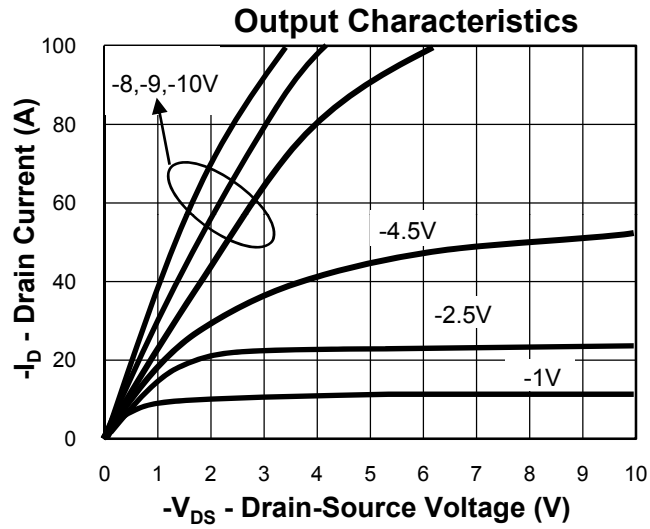
Typical Characteristics



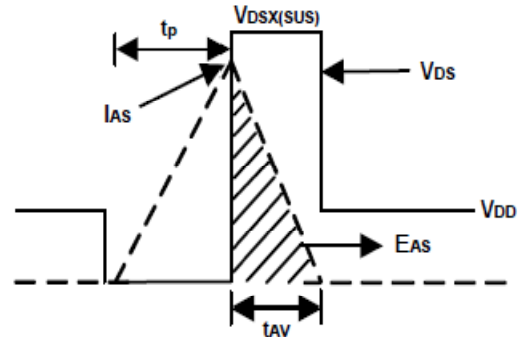
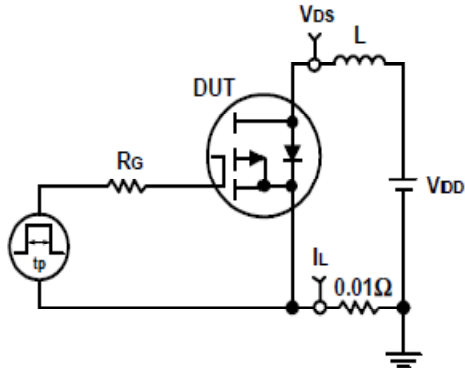
Thermal Transient Impedance



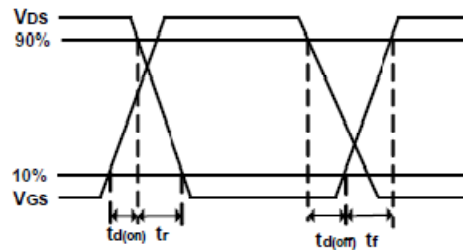
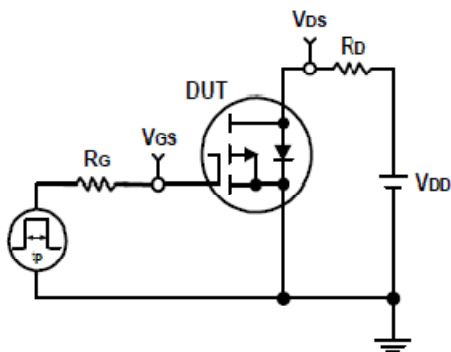
Typical Characteristics



Avalanche Test Circuit and Waveforms

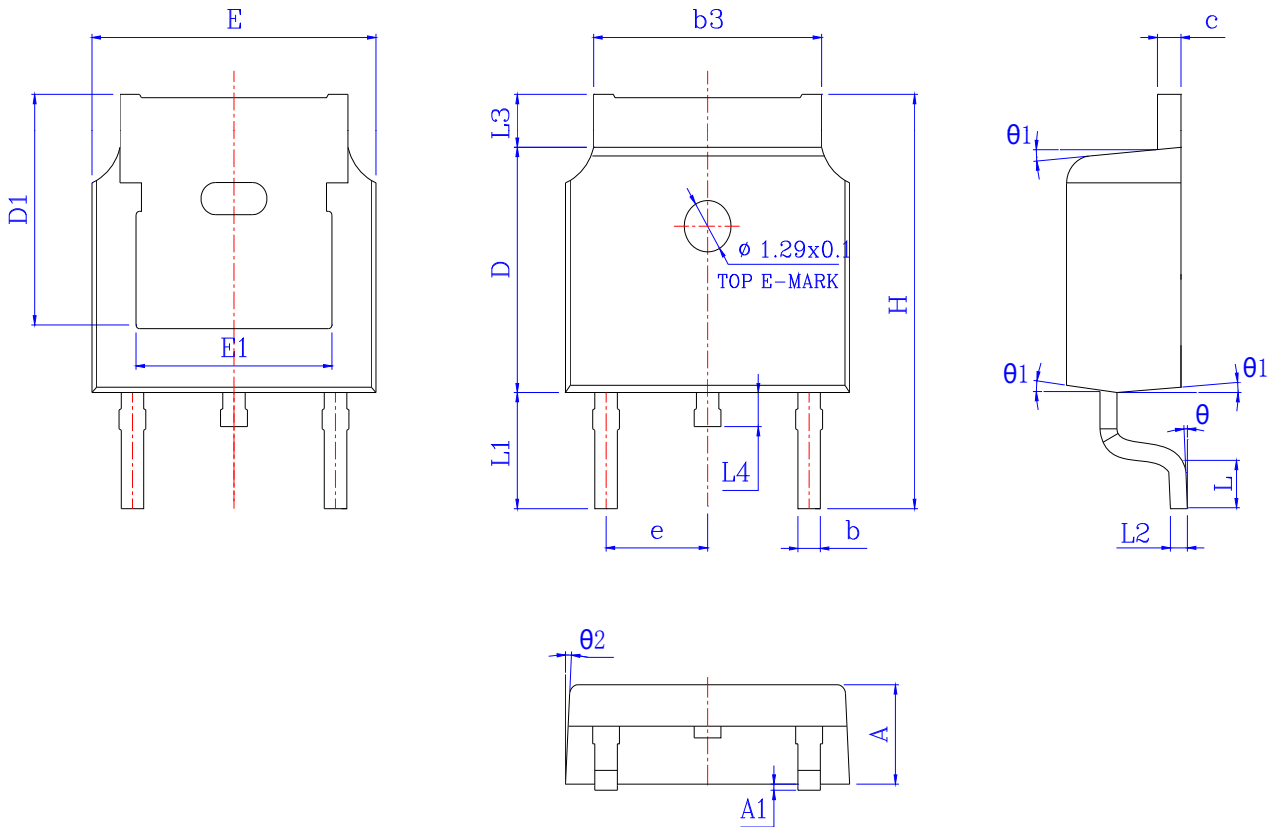


Switching Time Test Circuit and Waveforms



Package Information

TO252



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.200	2.300	2.400	0.087	0.091	0.094
A1	*	*	0.100	*	*	0.004
b	0.660	0.760	0.860	0.026	0.030	0.034
b3	5.130	5.295	5.460	0.202	0.208	0.215
c	0.470	0.535	0.600	0.019	0.021	0.024
D	6.000	6.100	6.200	0.236	0.240	0.244
D1	5.30 REF			0.20 REF		
E	6.500	6.600	6.700	0.256	0.260	0.264
E1	4.700	4.810	4.920	0.185	0.189	0.194
e	2.28 REF			0.09 REF		
H	9.800	10.100	10.400	0.386	0.398	0.409
L	1.400	1.550	1.700	0.055	0.061	0.067
L1	2.743 REF			0.108 REF		
L2	0.510 BSC			0.020 BSC		
L3	0.900	1.075	1.250	0.035	0.042	0.049
L4	0.600	0.800	1.000	0.024	0.031	0.039
θ	0°	*	8°	0°	*	8°
$\theta 1$	5°	7°	9°	5°	7°	9°
$\theta 2$	5°	7°	9°	5°	7°	9°

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