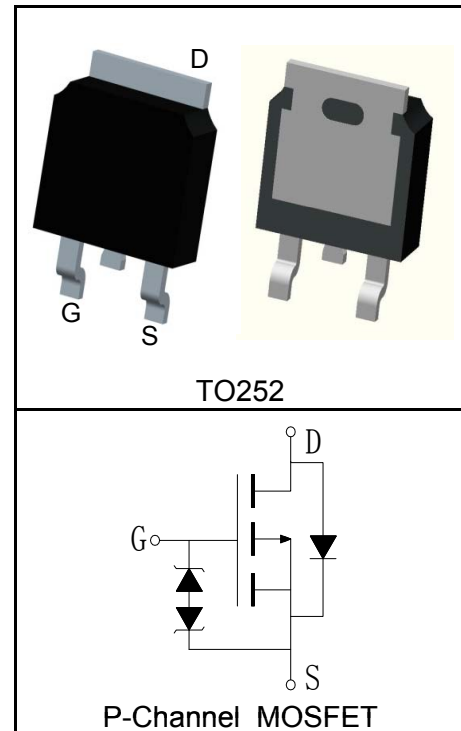


**Features**

- -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
<b>Common Ratings</b> ( $T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
$V_{DSS}$	Drain-Source Voltage	-30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	
$T_J$	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
<b>Mounted on Large Heat Sink</b>			
$I_{DP}^{(1)}$	300 $\mu\text{s}$ 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	$^\circ\text{C}/\text{W}$
<b>Drain-Source Avalanche Ratings</b>			
$E_{AS}^{(3)}$	Avalanche Energy, Single Pulsed	110	mJ

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

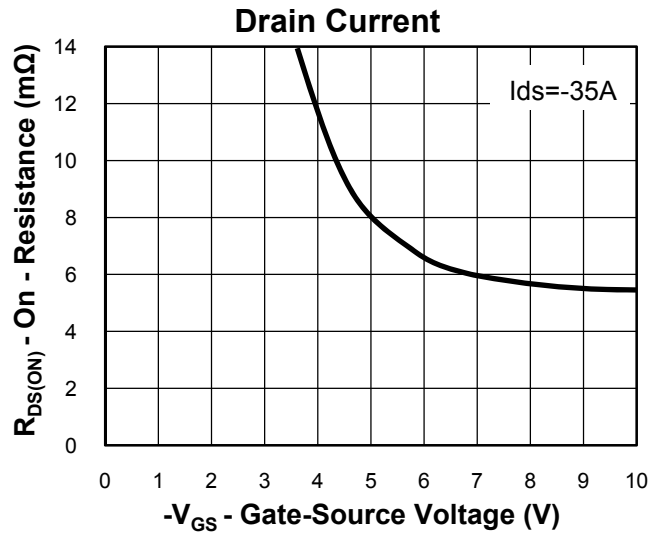
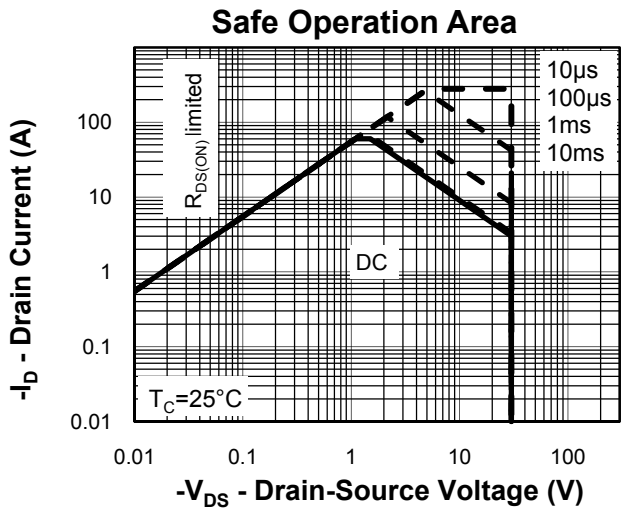
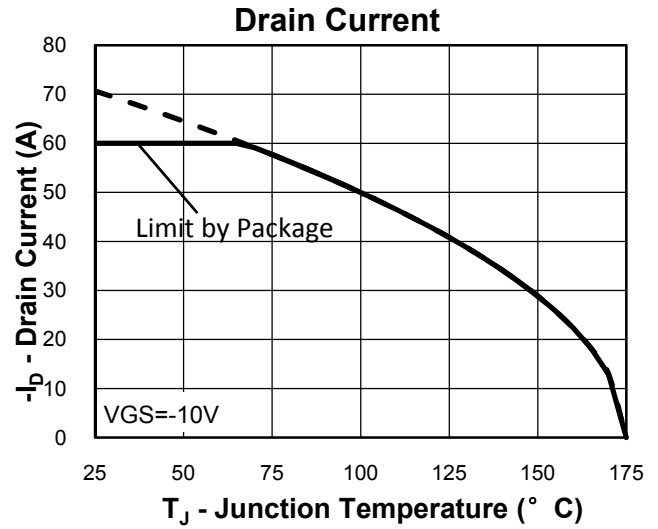
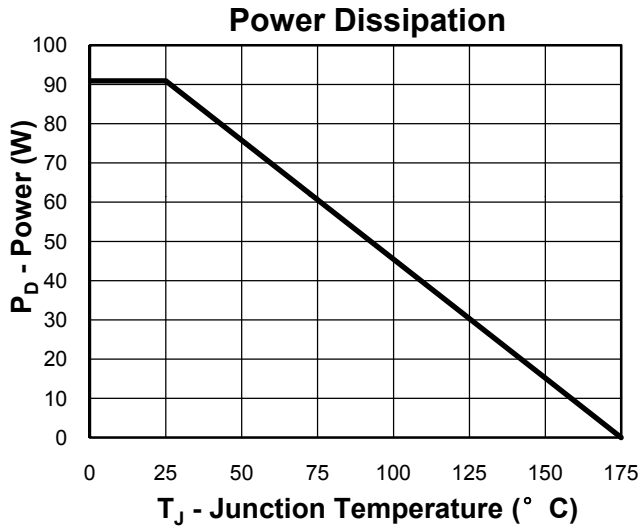
Symbol	Parameter	Test Condition	RU30L70L			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-30			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
		$T_J=125^\circ C$			-30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1		-2.5	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 10$	$\mu A$
$R_{DS(ON)}^{(4)}$	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	$m\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^{(4)}$	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
<b>Dynamic Characteristics</b> <sup>(5)</sup>						
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		3.6		$\Omega$
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-15V,$ Frequency=1.0MHz		4680		$\mu F$
$C_{oss}$	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		
<b>Gate Charge Characteristics</b> <sup>(5)</sup>						
$Q_g$	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.

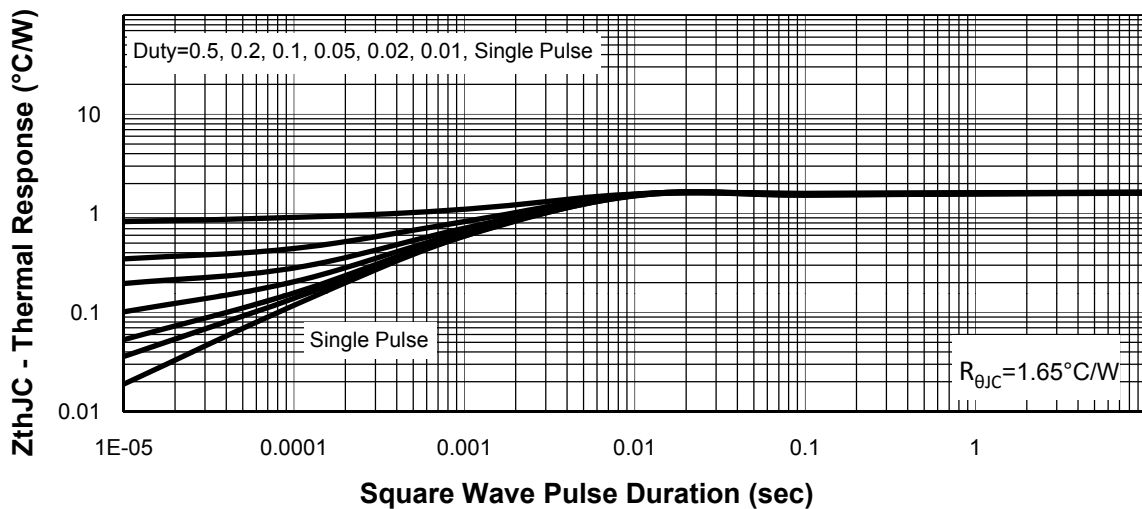
**Ordering and Marking Information**

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

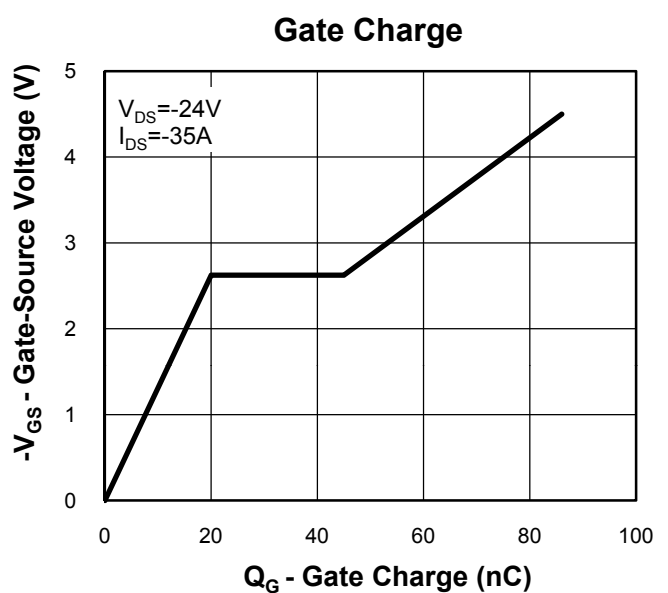
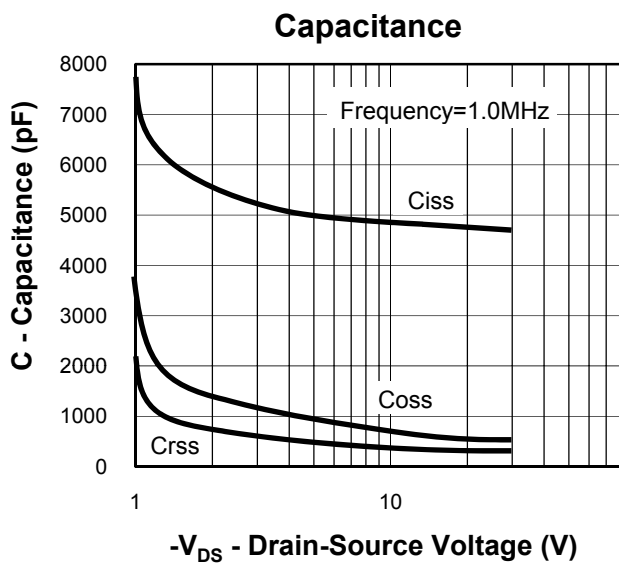
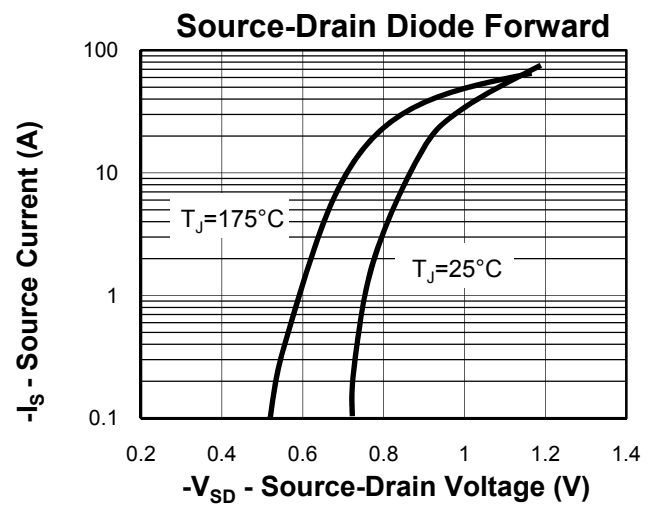
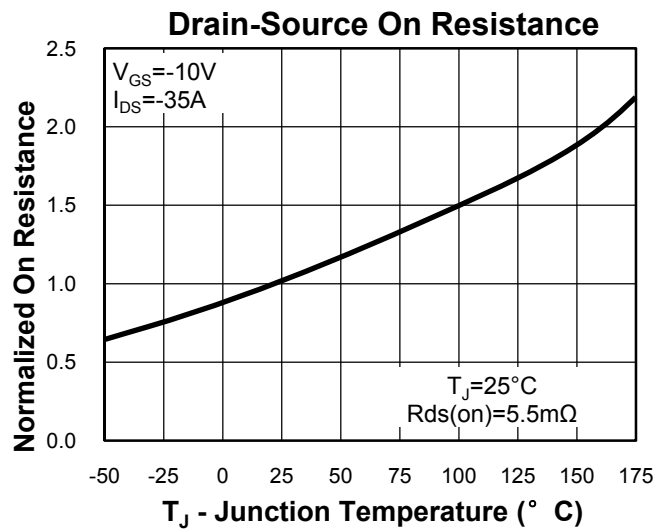
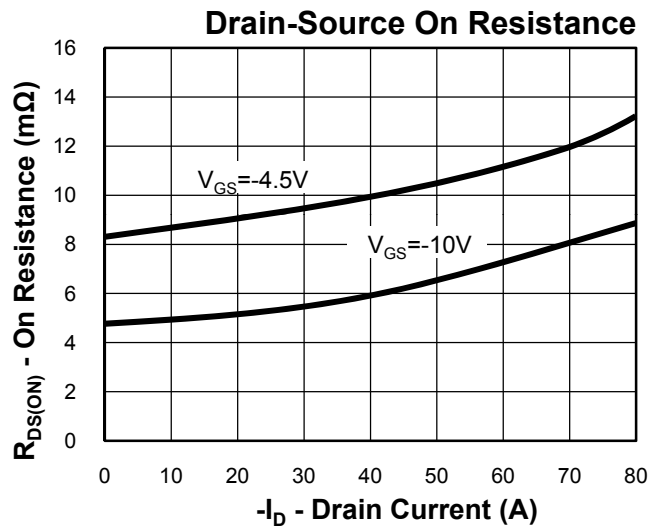
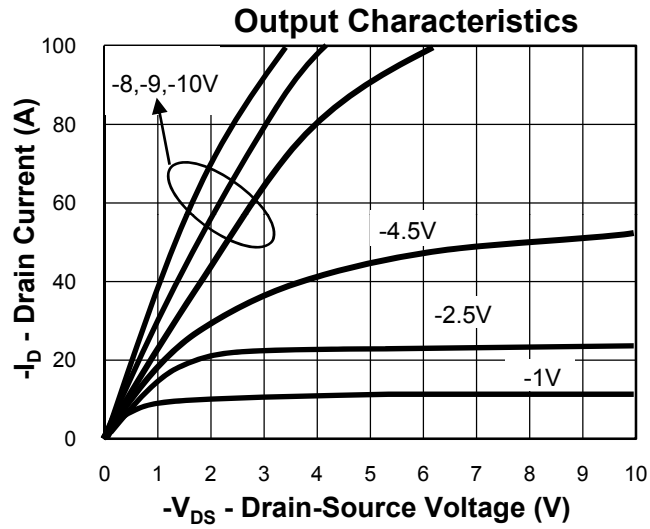
**Typical Characteristics**



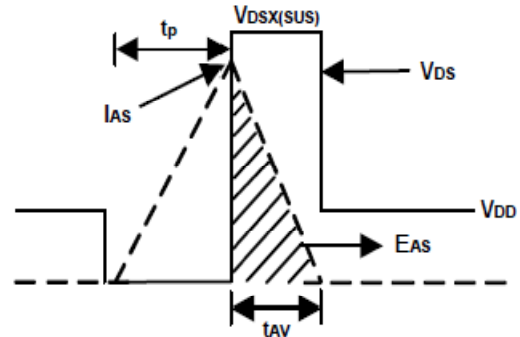
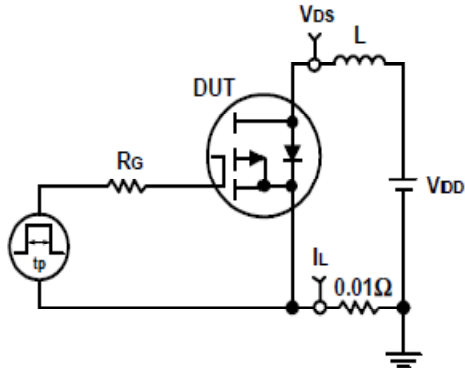
**Thermal Transient Impedance**



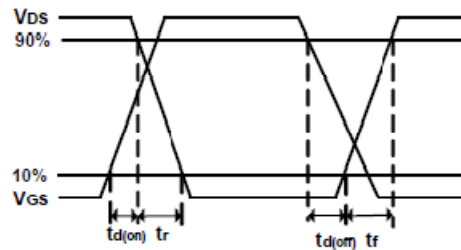
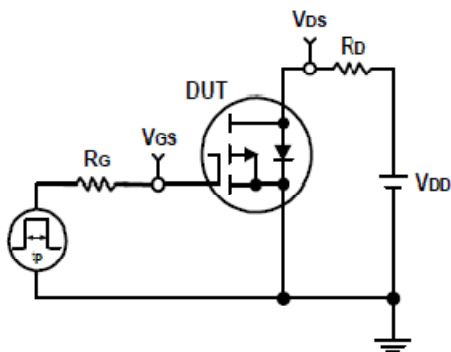
**Typical Characteristics**



**Avalanche Test Circuit and Waveforms**

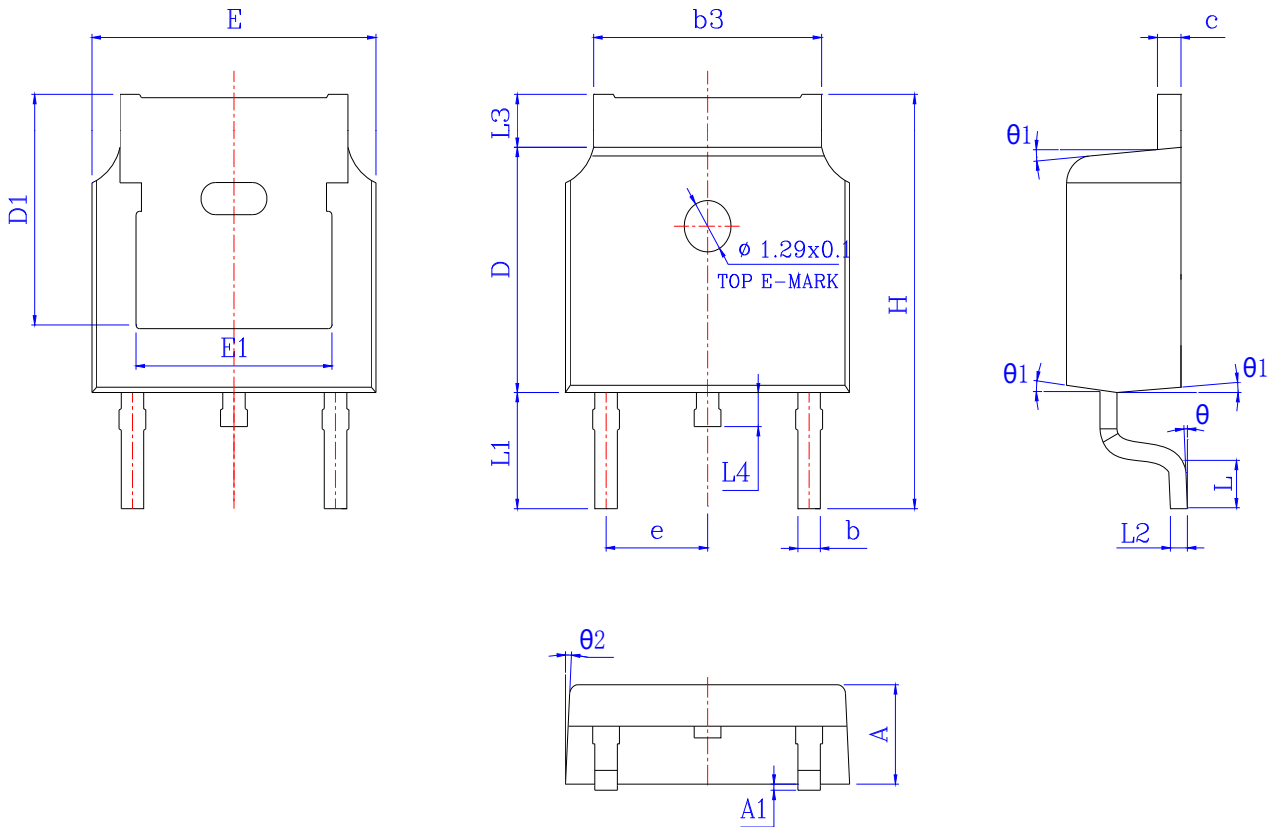


**Switching Time Test Circuit and Waveforms**



**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
$\theta$	0°	*	8°	0°	*	8°
$\theta 1$	5°	7°	9°	5°	7°	9°
$\theta 2$	5°	7°	9°	5°	7°	9°

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