

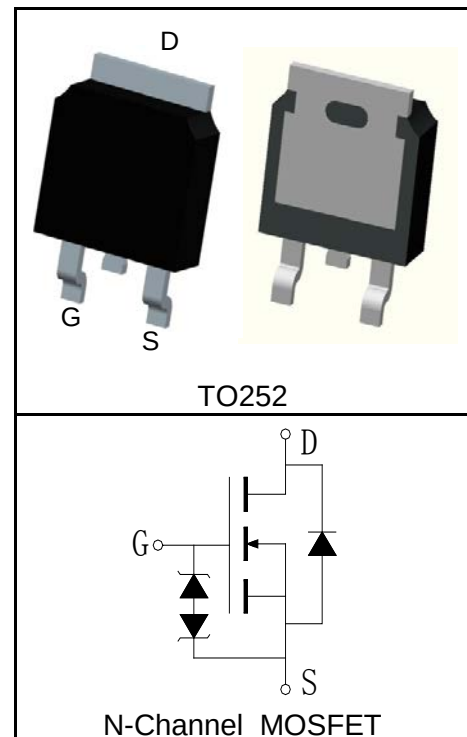
Features

- 40V/80A,
 $R_{DS(ON)} = 4.5m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 5.5m\Omega(Typ.)@V_{GS}=4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- ESD protected
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Switching Applications

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		40	V
V _{GSS}	Gate-Source Voltage		±16	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	80	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	320	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	80	A
		T _C =100°C	62	
P _D	Maximum Power Dissipation	T _C =25°C	96	W
		T _C =100°C	48	
R _{θJC}	Thermal Resistance-Junction to Case		1.55	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		256	mJ

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

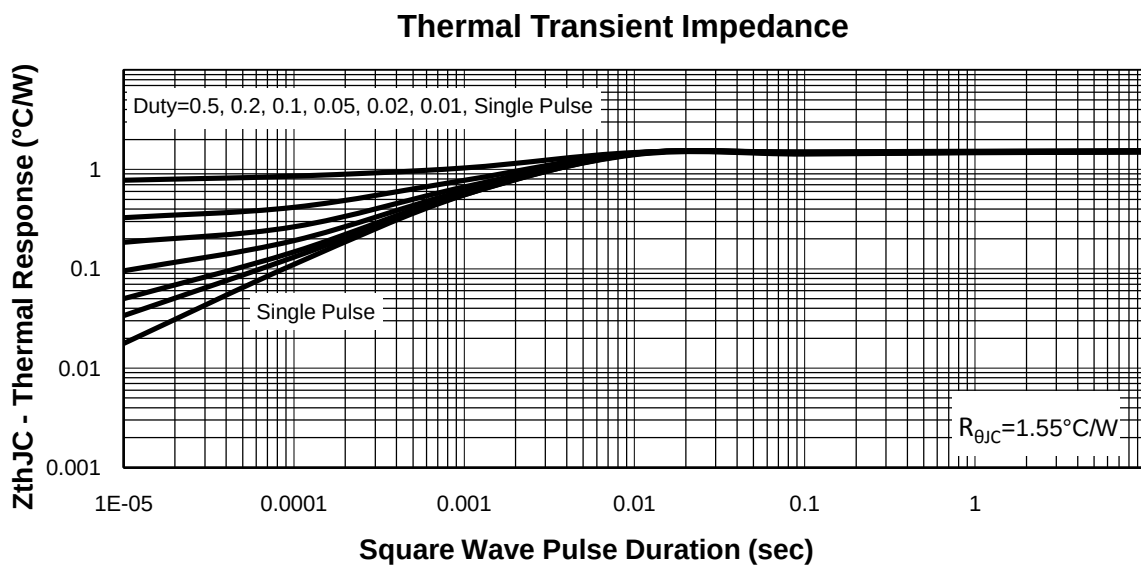
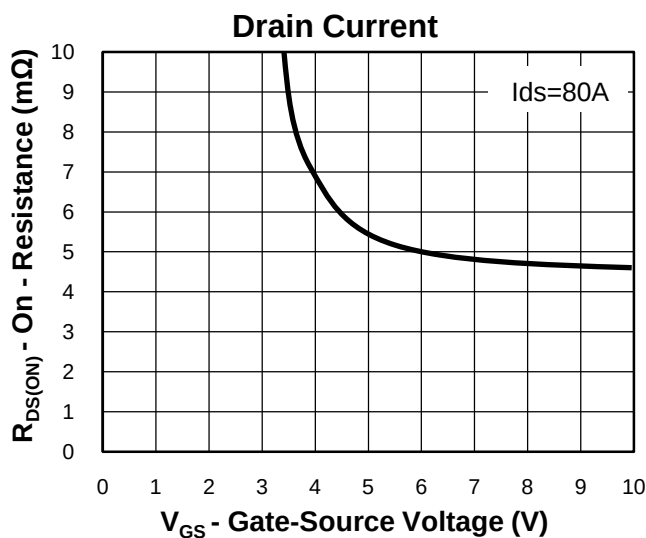
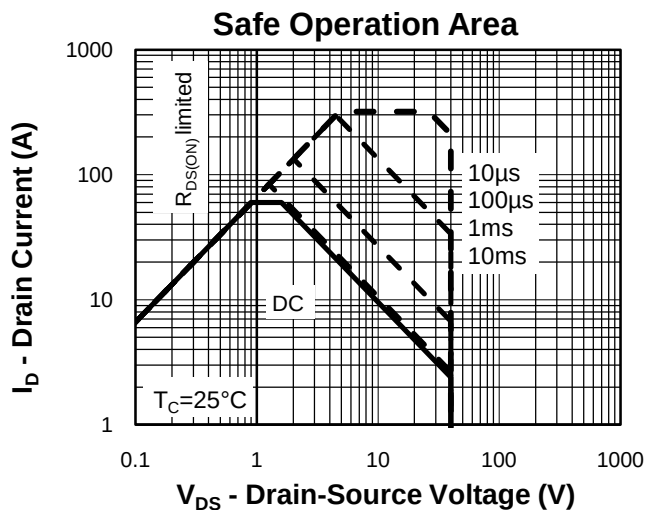
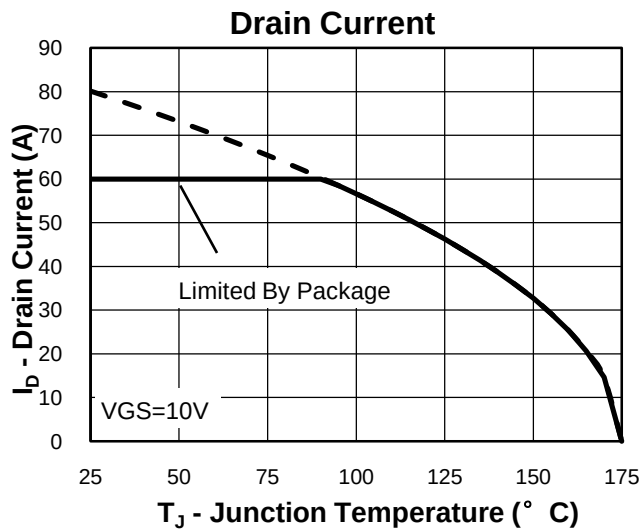
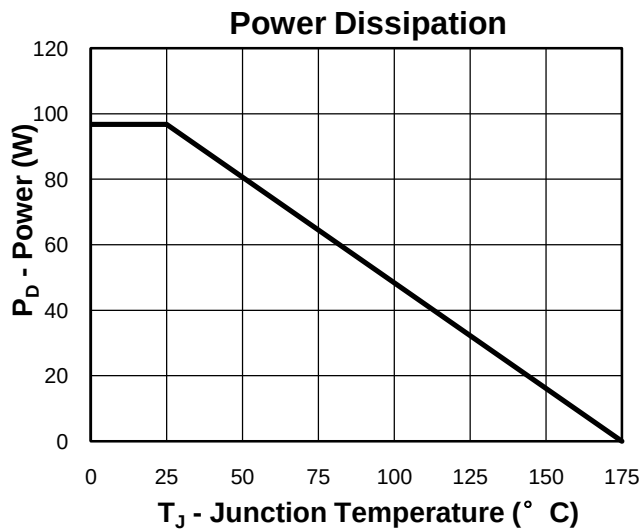
Symbol	Parameter	Test Condition	RU40E80L			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V			1	μA
			T _J =125°C		30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.3		2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±16V, V _{DS} =0V			10	μA
R _{DS(ON)} ^④	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =80A		4.5	7	mΩ
		V _{GS} =4.5V, I _{DS} =64A		5.5	11	mΩ
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =80A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =40A, dI _{SD} /dt=100A/μs		25		ns
Q _{rr}	Reverse Recovery Charge			22		μC
Dynamic Characteristics ^⑤						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz		1.2		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz		1620		pF
C _{oss}	Output Capacitance			295		
C _{rss}	Reverse Transfer Capacitance			85		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V,I _{DS} =40A, V _{GEN} =10V,R _G =4.7Ω		15		ns
t _r	Turn-on Rise Time			55		
t _{d(OFF)}	Turn-off Delay Time			42		
t _f	Turn-off Fall Time			13		
Gate Charge Characteristics ^⑤						
Q _g	Total Gate Charge	V _{DS} =32V, V _{GS} =10V, I _{DS} =40A		42		nC
Q _{gs}	Gate-Source Charge			11		
Q _{gd}	Gate-Drain Charge			15		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The Package limitation current is 60A.
 - ③ Limited by T_{Jmax} , $I_{AS}=32A$, $V_{DD}=32V$, $R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 - ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

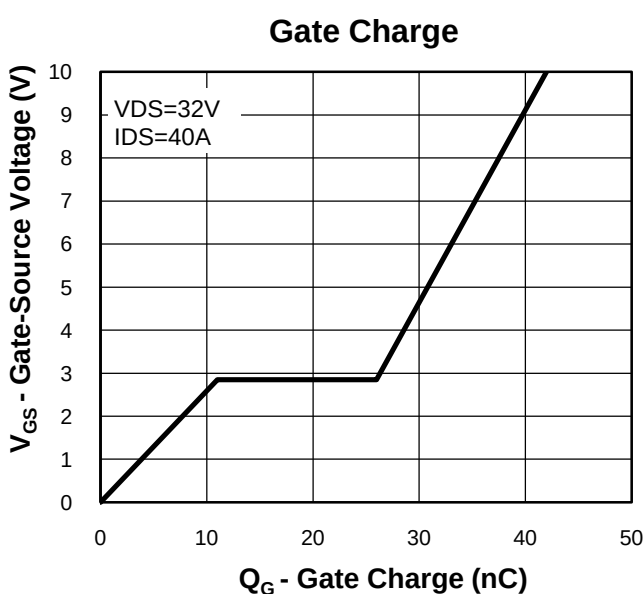
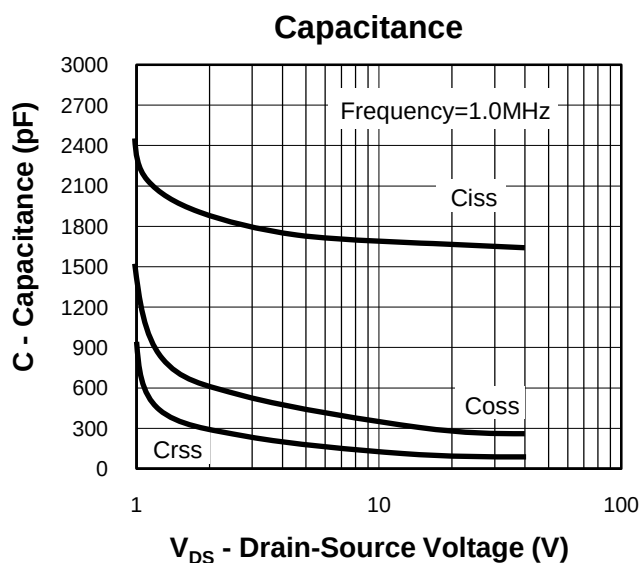
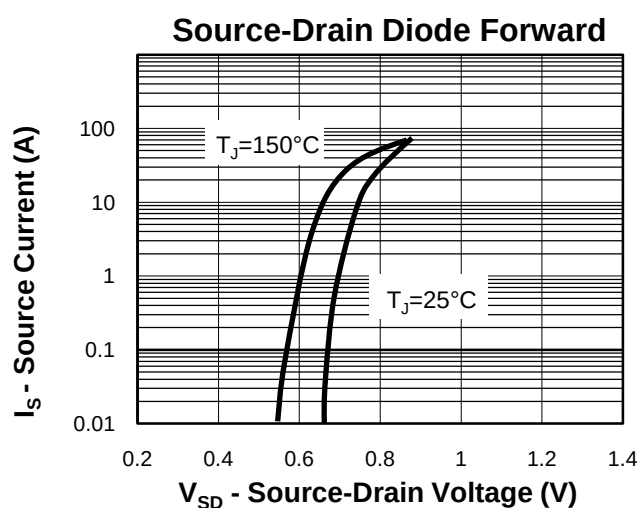
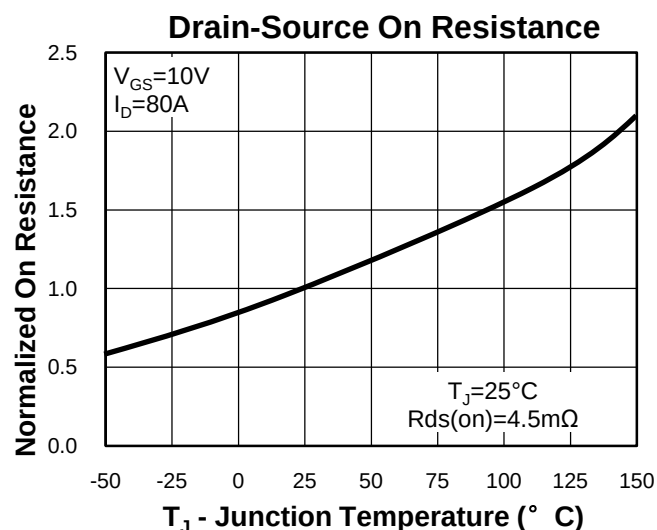
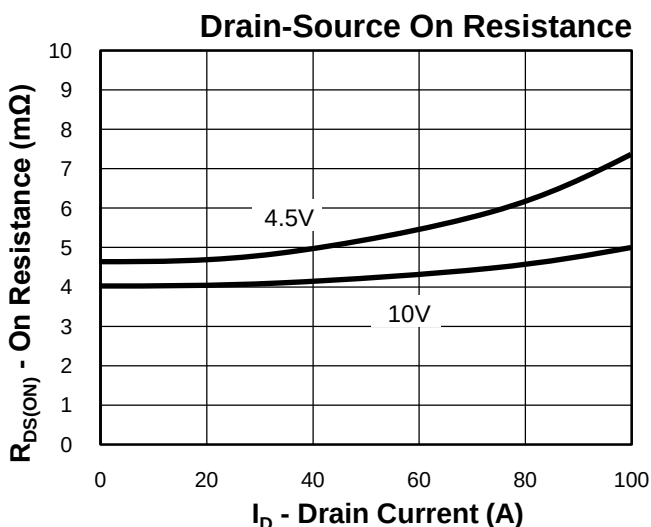
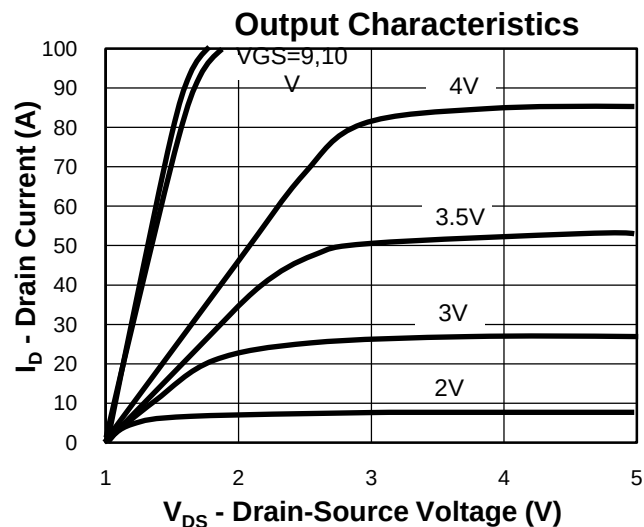
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU40E80L	RU40E80L	TO252	Tape&Reel	2500	13"	16mm

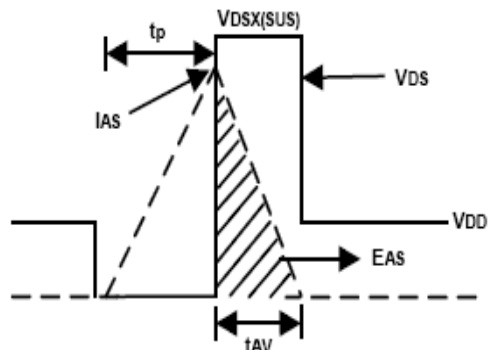
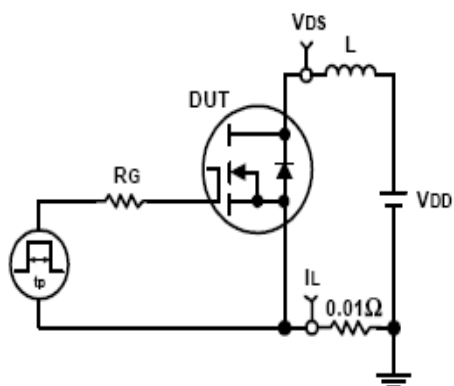
Typical Characteristics



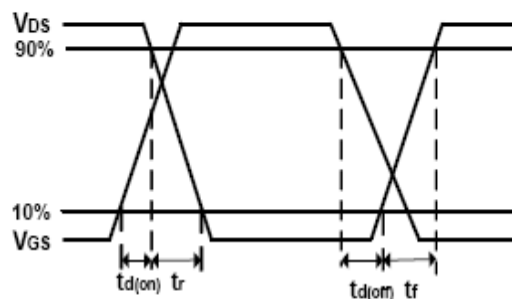
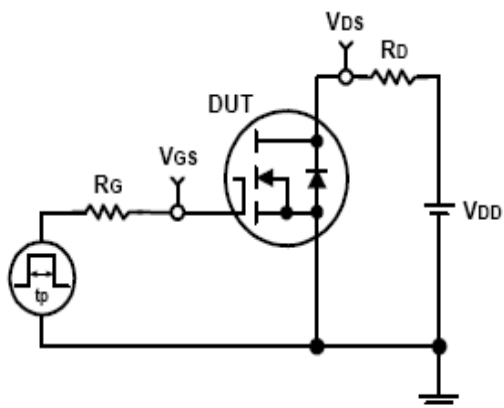
Typical Characteristics



Avalanche Test Circuit and Waveforms

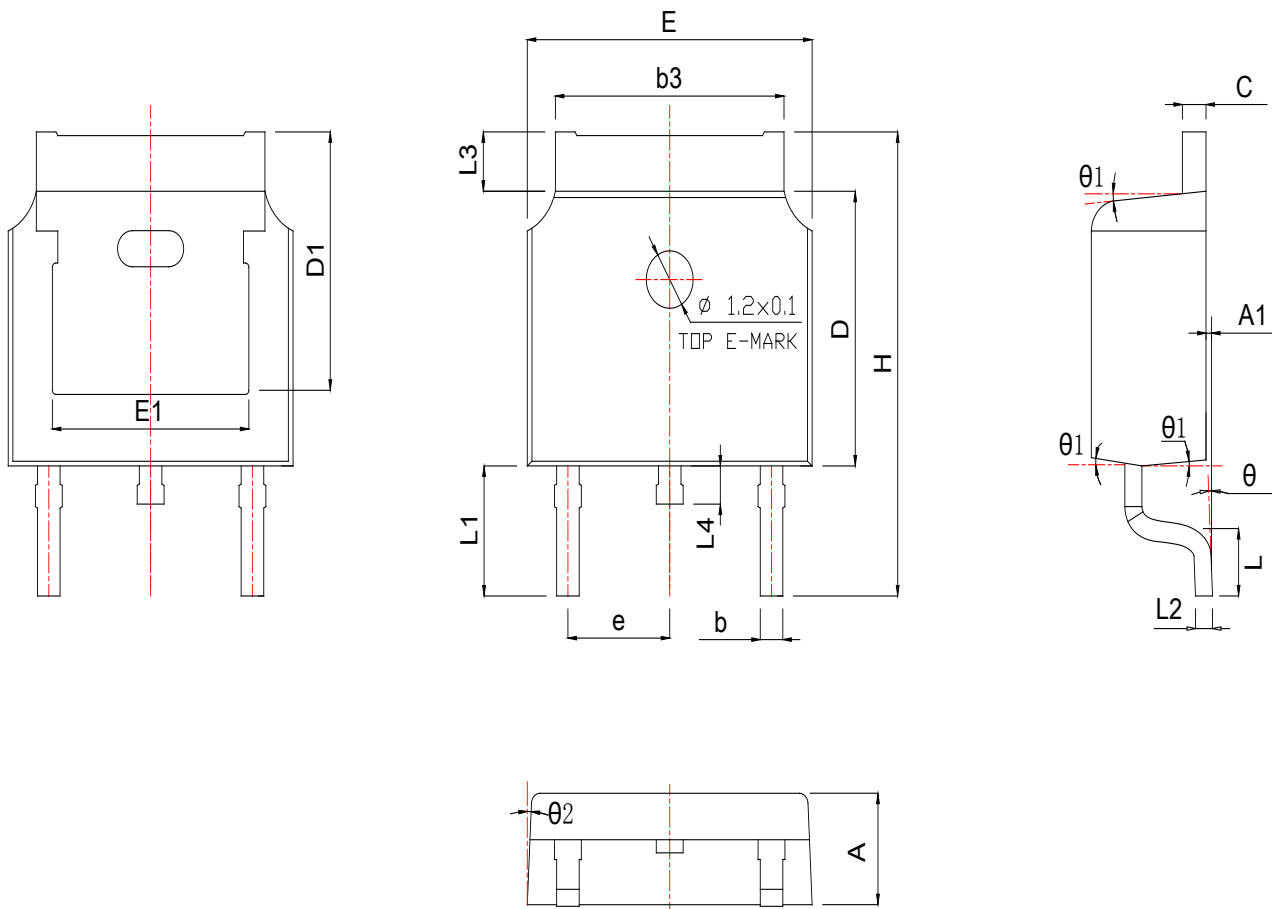


Switching Time Test Circuit and Waveforms



Package Information

TO252



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.200	2.290	2.380	0.087	0.090	0.094
A1	0.000		0.100	0.000		0.004
b	0.720	0.785	0.850	0.028	0.031	0.033
b3	5.230	5.345	5.460	0.206	0.210	0.215
c	0.470	0.525	0.580	0.019	0.021	0.023
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	9.900	10.100	10.300	0.390	0.398	0.406
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°

Customer Service

Worldwide Sales and Service:

Sales@ruichips.com

Technical Support:

Technical@ruichips.com

Investor Relations Contacts:

Investor@ruichips.com

Marcom Contact:

Marcom@ruichips.com

Editorial Contact:

Editorial@ruichips.comm

HR Contact:

HR@ruichips.com

Legal Contact:

Legal@ruichips.com

Shen Zhen RUICHIPS Semiconductor CO., LTD

Room 501, the 5floor An Tong Industrial Building,
NO.207 Mei Hua Road Fu Tian Area Shen Zhen City, CHINA

TEL: (86-755) 8311-5334

FAX: (86-755) 8311-4278

E-mail: Sales-SZ@ruichips.com