

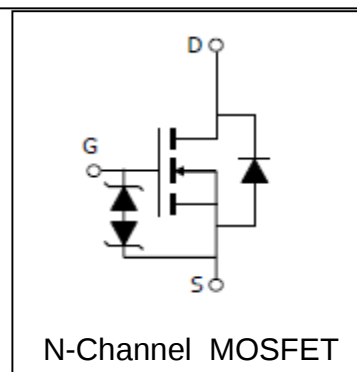
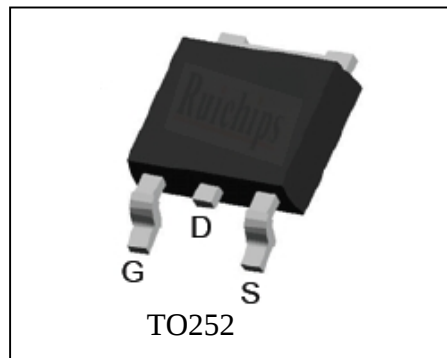
Features

- 60V/16A,
 $R_{DS(ON)} = 60m\Omega(Typ.) @ V_{GS}=10V$
 $R_{DS(ON)} = 75m\Omega(Typ.) @ V_{GS}=4.5V$
- Super High Dense Cell Design
- ESD protected
- Reliable and Rugged
- 100% avalanche tested
- Lead Free and Green Devices Available
(RoHS Compliant)

Applications

- Power Management

Pin Description



Absolute Maximum Ratings

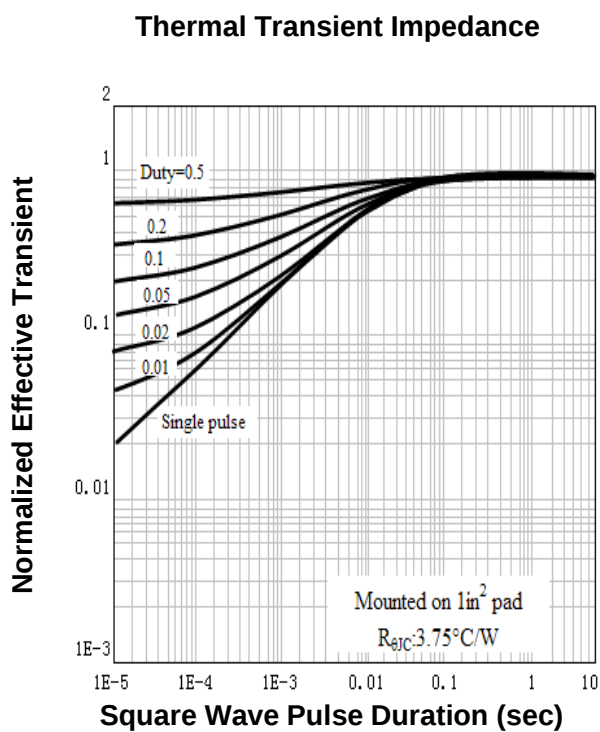
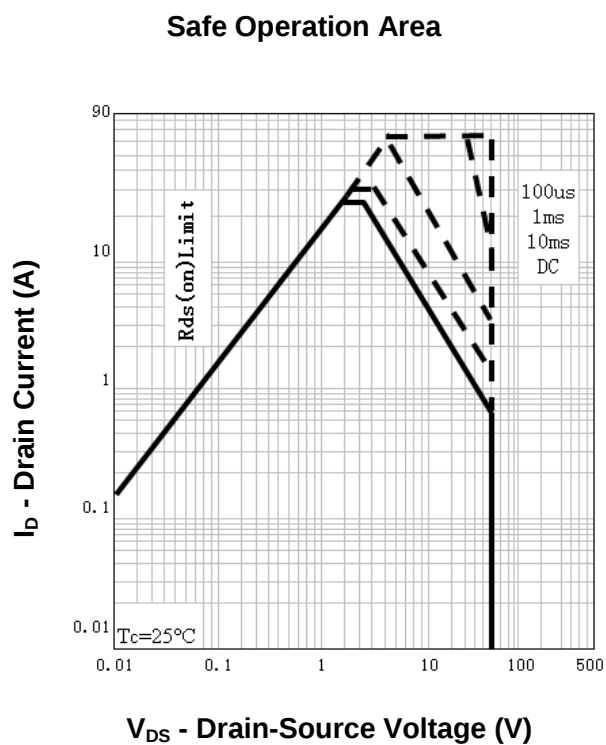
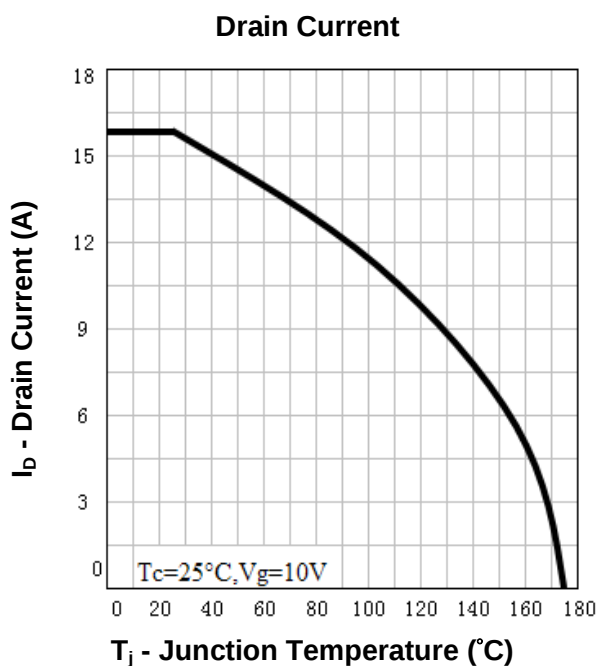
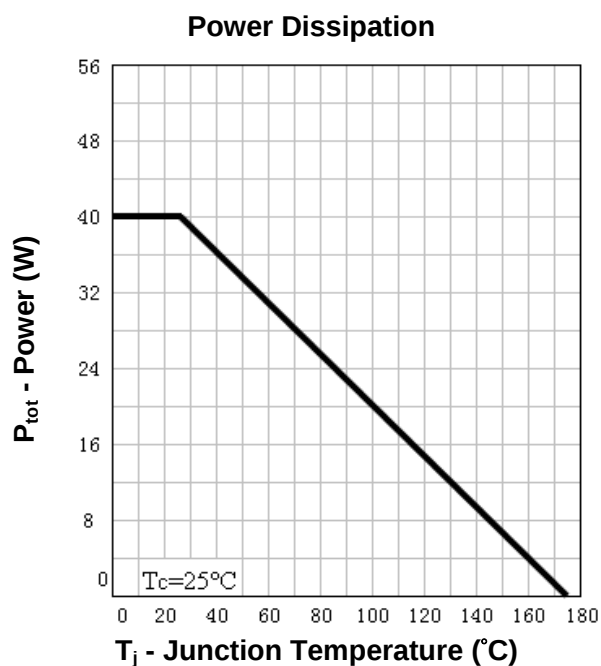
Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		60	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	16	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _C =25°C	64 ^①	A
I _D	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	16 ^②	A
		T _C =100°C	11.5	
P _D	Maximum Power Dissipation	T _C =25°C	40	W
		T _C =100°C	20	
R _{θJC}	Thermal Resistance-Junction to Case		3.75	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		25	mJ

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

Symbol	Parameter	Test Condition	RU60E16L			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60V, V _{GS} =0V			1	μA
		T _J =85°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.5	2	2.7	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} =8A		60	75	mΩ
		V _{GS} = 4.5V, I _{DS} =5.5A		75	90	mΩ
Diode Characteristics						
V _{SD} ④	Diode Forward Voltage	I _{SD} =8A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =8A, dI _{SD} /dt=100A/μs		38		ns
Q _{rr}	Reverse Recovery Charge			67		nC
Dynamic Characteristics ⑤						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz		1.3		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} = 30V, Frequency=1.0MHz		480		pF
C _{oss}	Output Capacitance			75		
C _{rss}	Reverse Transfer Capacitance			48		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, R _L =3.8Ω, I _{DS} =8A, V _{GEN} = 10V, R _G =4.7Ω		15		ns
t _r	Turn-on Rise Time			18		
t _{d(OFF)}	Turn-off Delay Time			33		
t _f	Turn-off Fall Time			16		
Gate Charge Characteristics ⑤						
Q _g	Total Gate Charge	V _{DS} =48V, V _{GS} = 10V, I _{DS} =8A		14	18	nC
Q _{gs}	Gate-Source Charge			2.9		
Q _{gd}	Gate-Drain Charge			5.2		

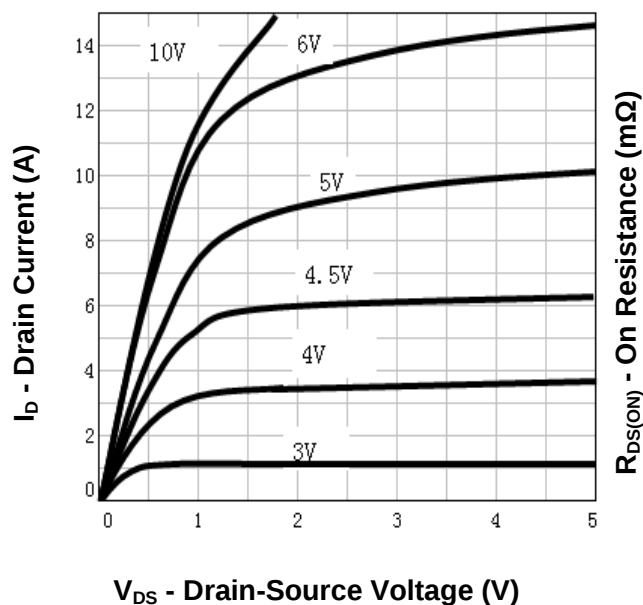
- Notes: ① Pulse width limited by safe operating area.
 ② Calculated continuous current based on maximum allowable junction temperature.
 ③ Limited by T_{Jmax} , $I_{AS}=10A$, $V_{DD}=48V$, $R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ⑤ Guaranteed by design, not subject to production testing.

Typical Characteristics

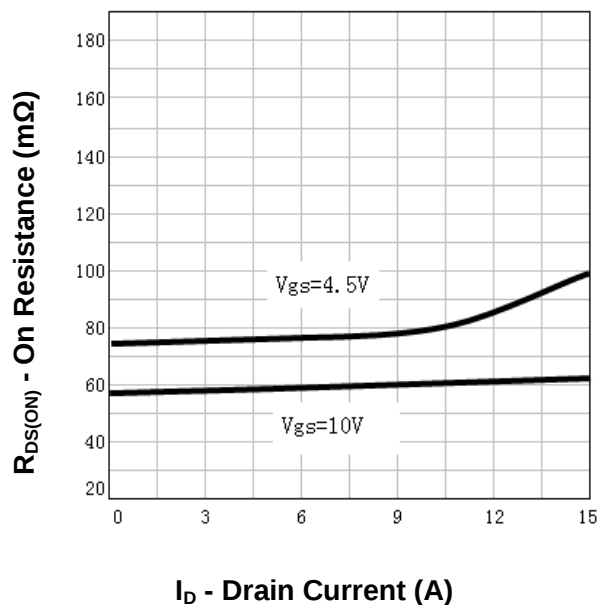


Typical Characteristics

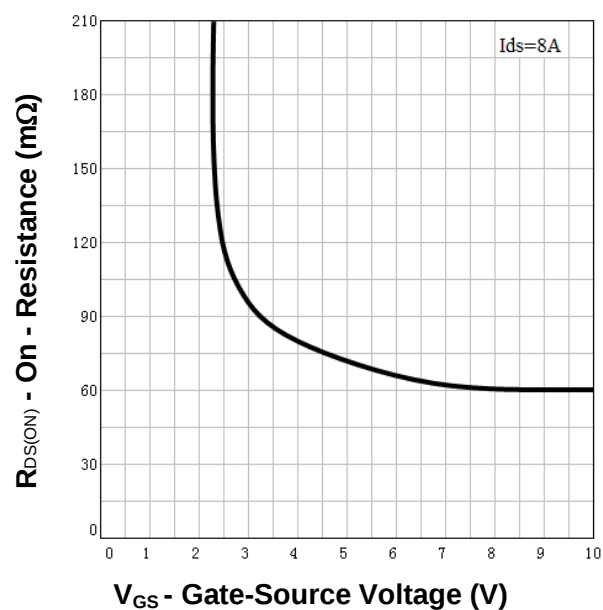
Output Characteristics



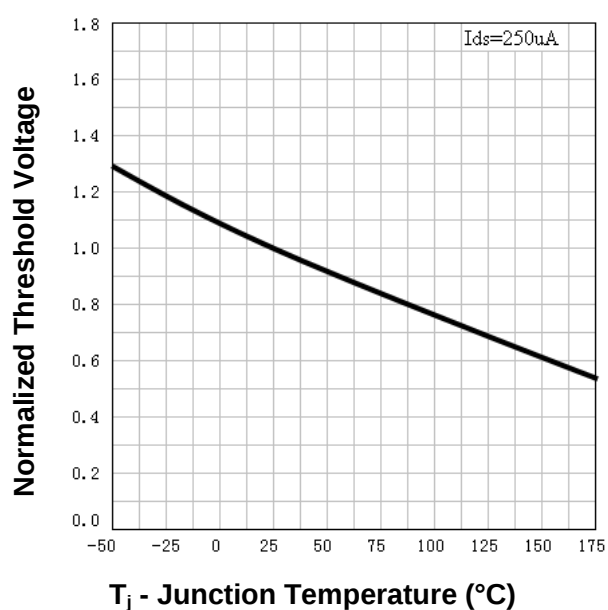
Drain-Source On Resistance



Drain-Source On Resistance

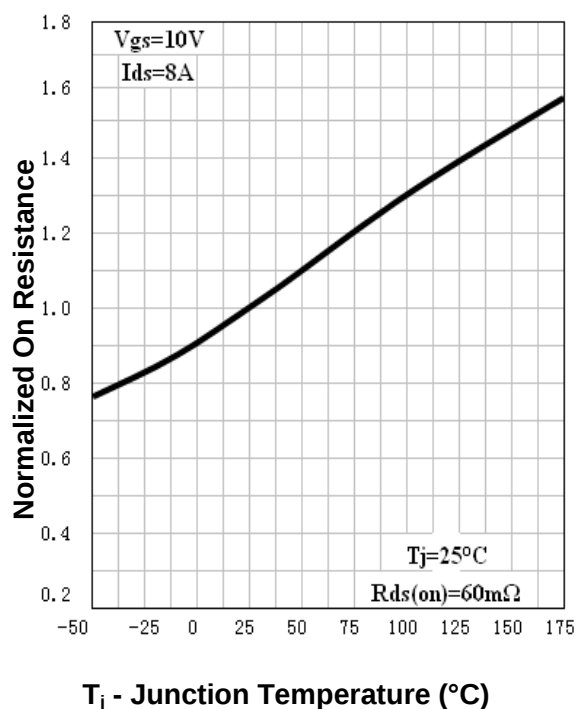


Gate Threshold Voltage

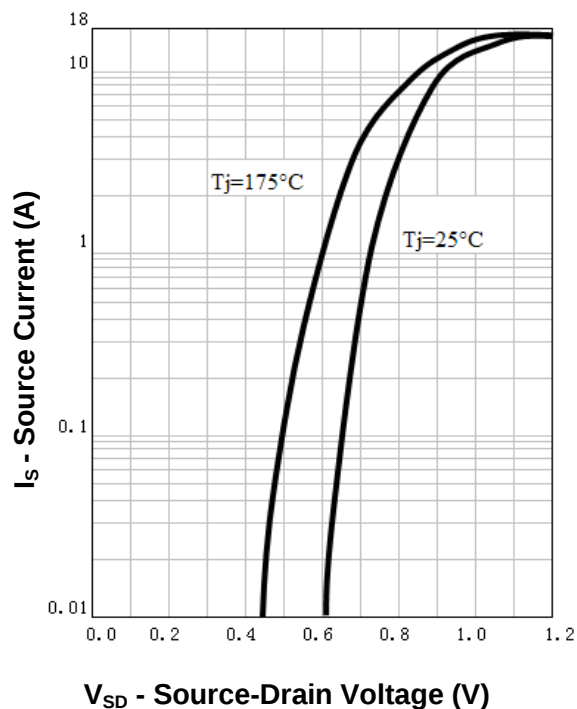


Typical Characteristics

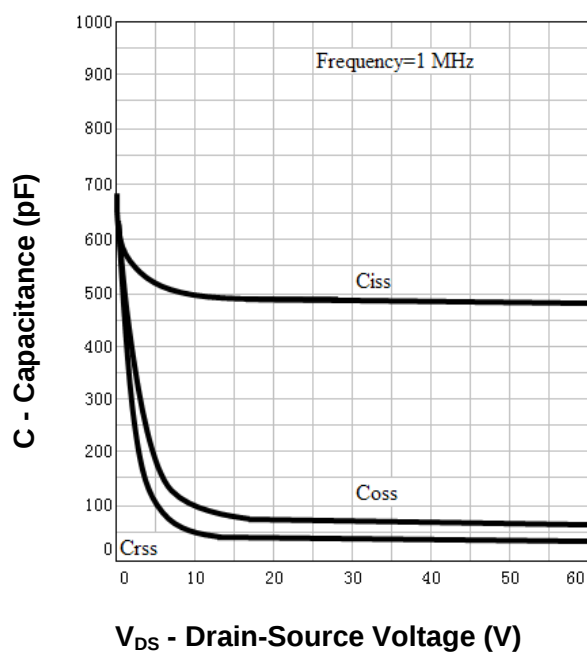
Drain-Source On Resistance



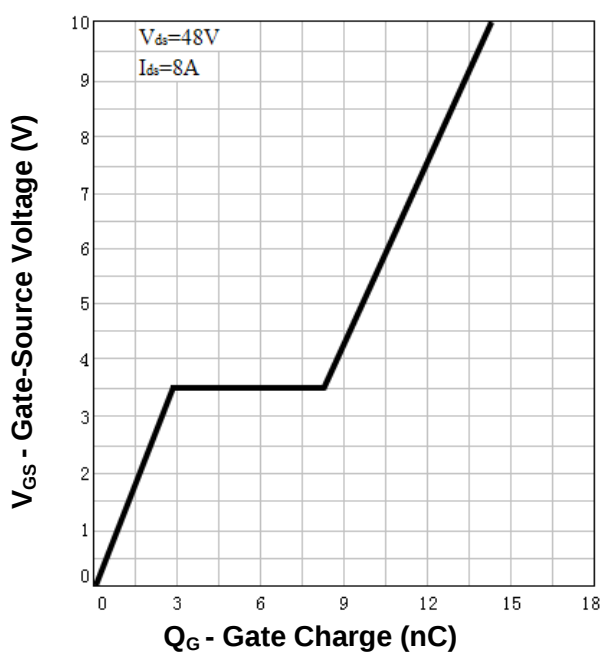
Source-Drain Diode Forward



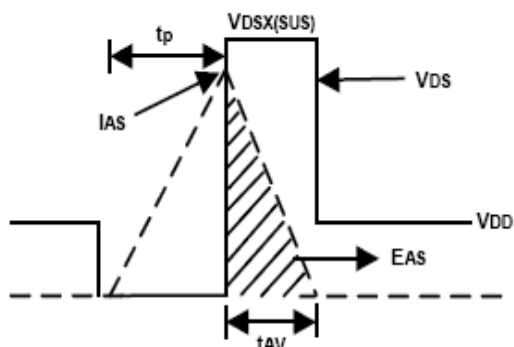
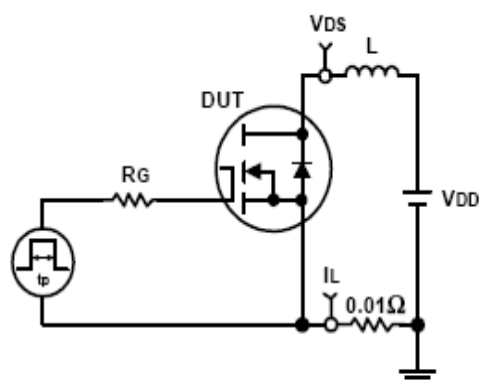
Capacitance



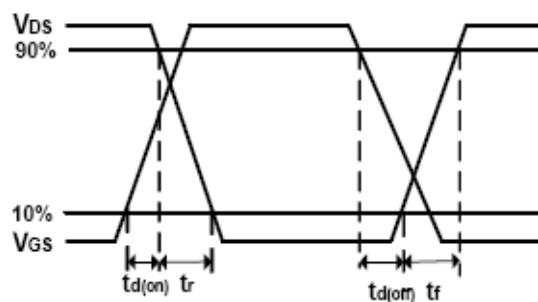
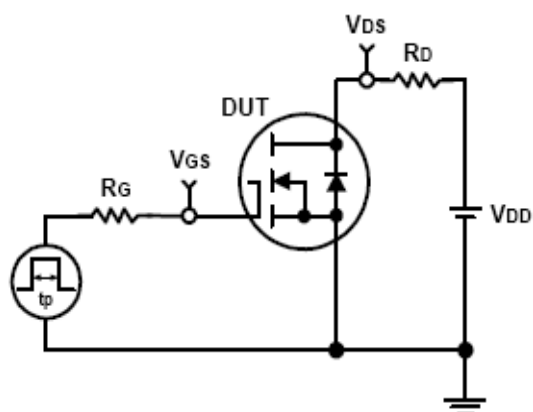
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

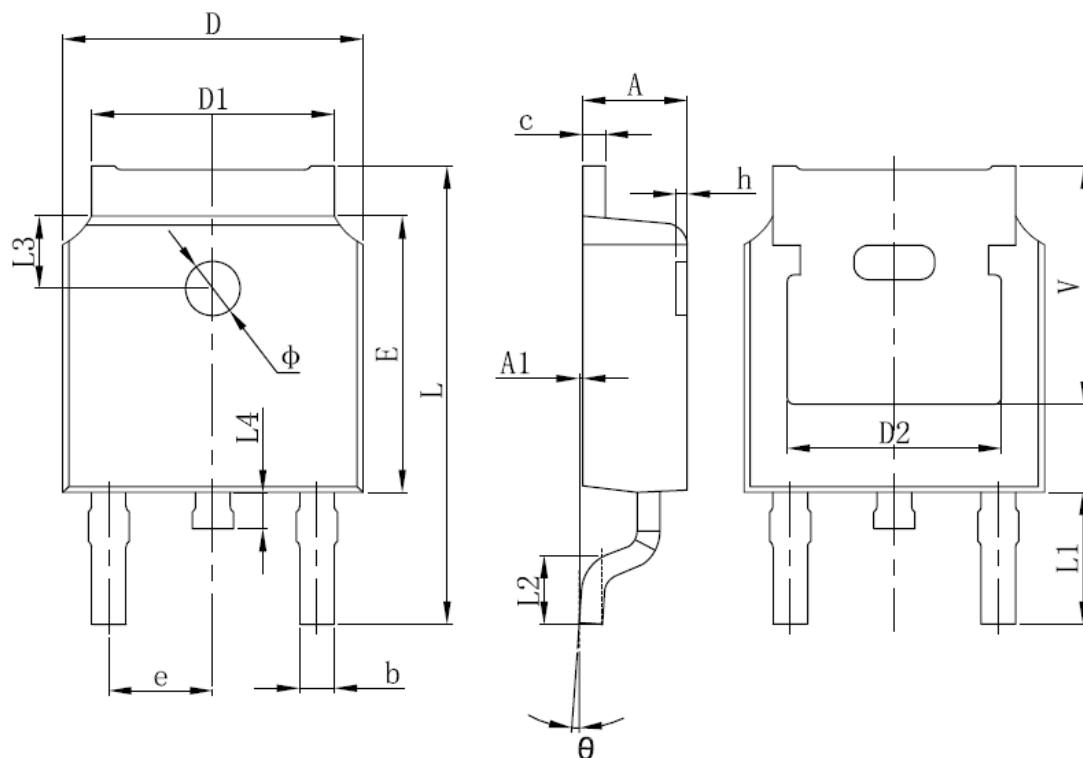


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU60E16L	RU60E16L	TO-252	Tape&Reel	2500	13’’	16mm

Package Information

TO252-2L



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	2.200	2.400	0.087	0.094	L	9.800	10.400	0.386	0.409
A1	0.000	0.127	0.000	0.005	L1	2.900 REF.		0.114 REF.	
b	0.660	0.860	0.026	0.034	L2	1.400	1.700	0.055	0.067
C	0.460	0.580	0.018	0.023	L3	1.600 REF.		0.063REF.	
D	6.500	6.700	0.256	0.264	L4	0.600	1.000	0.024	0.039
D1	5.100	5.460	0.201	0.215	Φ	1.100	1.300	0.043	0.051
D2	4.830 REF.		0.190 REF.		θ	0°	8°	0°	8°
E	6.000	6.200	0.236	0.244	h	0.000	0.300	0.000	0.012
e	2.186	2.386	0.086	0.094	V	5.350 REF.		0.211 REF.	

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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.com

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