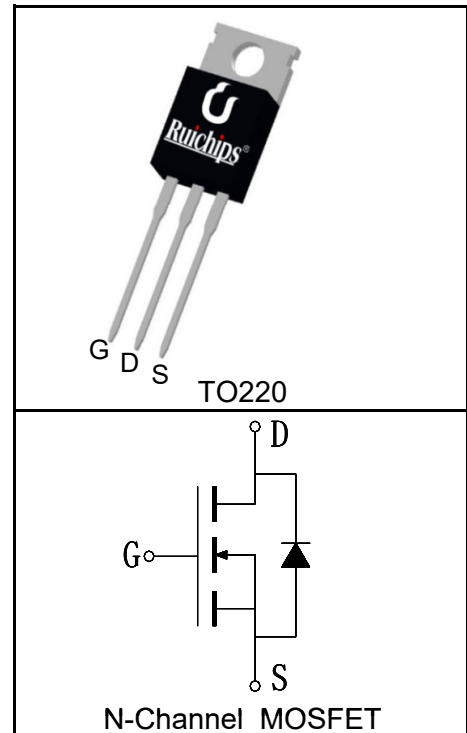


Features

- 100V/150A,
 $R_{DS(ON)} = 3.2m\Omega(Typ.)@V_{GS}=10V$
- Advanced HEFET® Technology
- Ultra Low On-Resistance
- Excellent $Q_g \times R_{DS(on)}$ Product
- 100% avalanche tested
- 175°C Operating Temperature
- Lead Free and Green Devices Available (RoHS Compliant)


Applications

- Motor Drives
- Uninterruptible Power Supplies
- DC/DC converter
- General Purpose Applications

Pin Description

Absolute Maximum Ratings

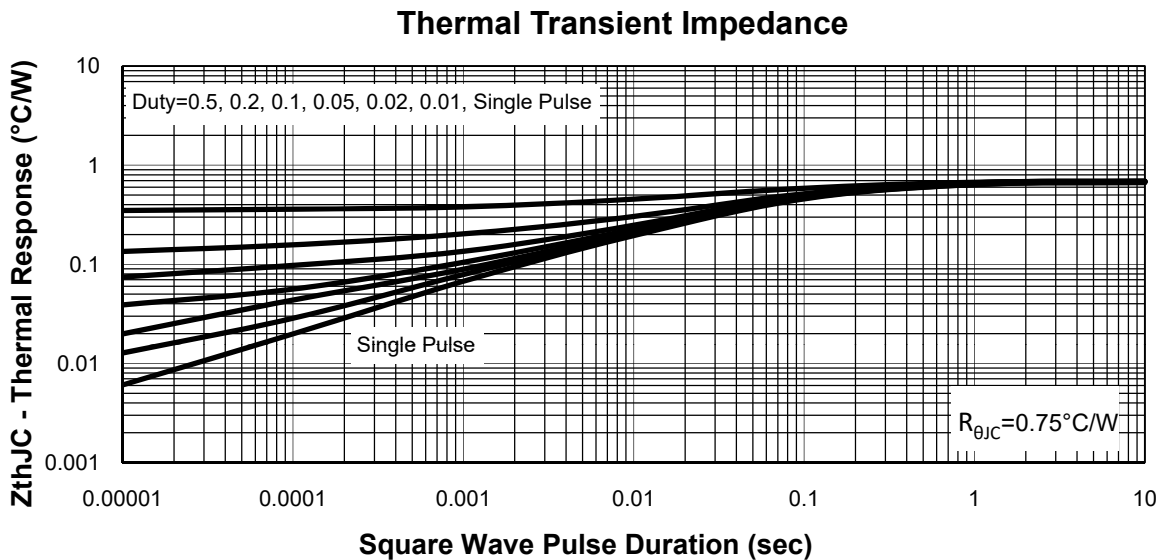
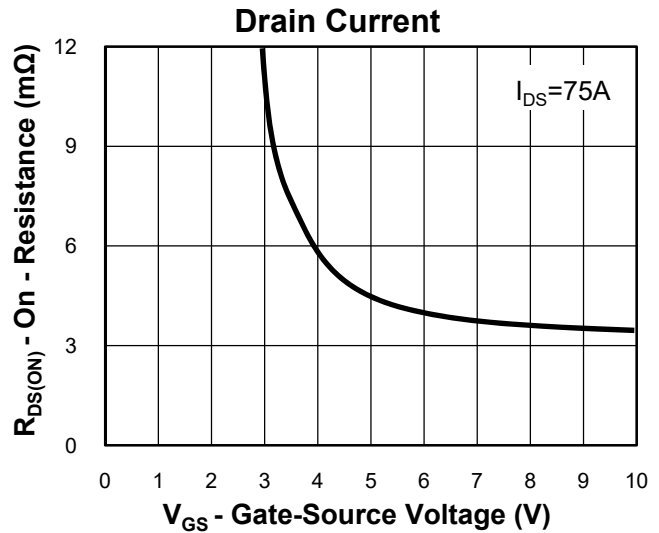
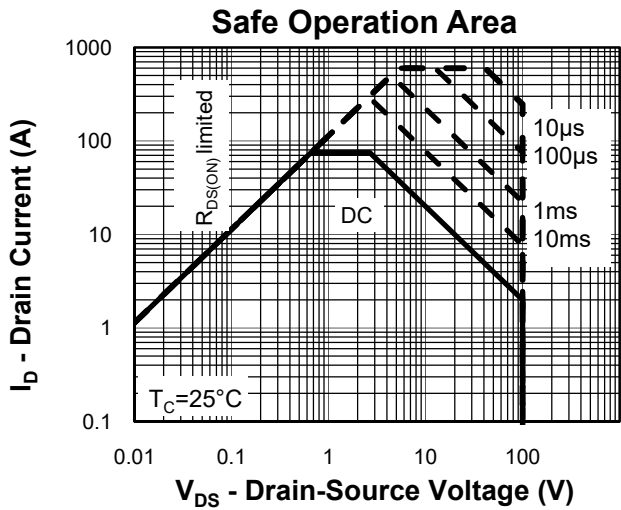
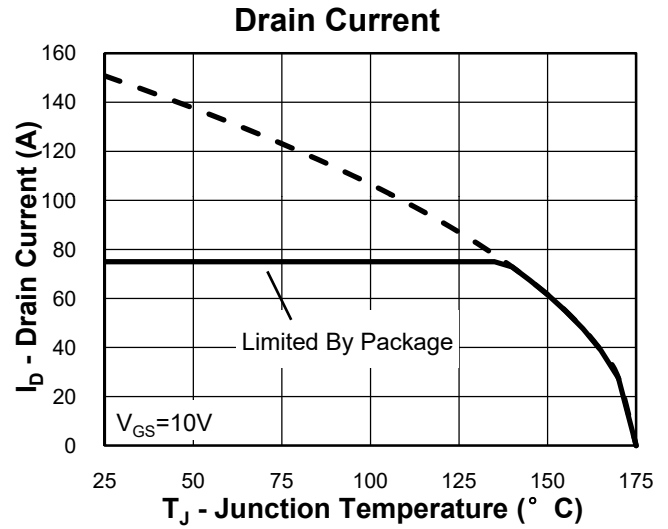
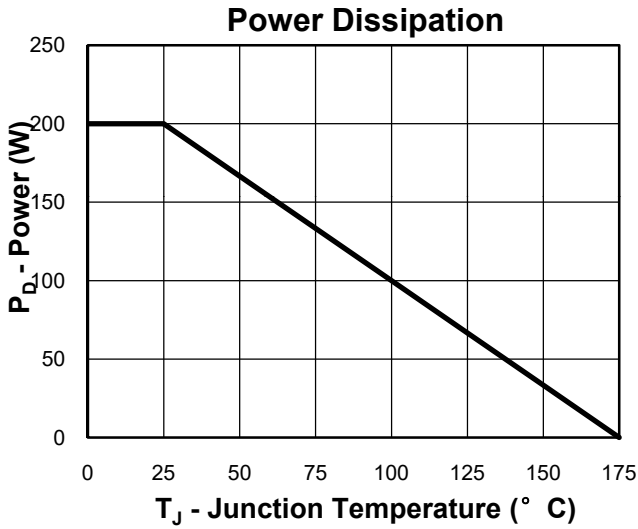
Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	100	V
V_{GSS}	Gate-Source Voltage	± 25	
T_J	Maximum Junction Temperature	175	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 75	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 600	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=10V$)	$T_C=25^\circ\text{C}$ 150	A
		$T_C=100^\circ\text{C}$ 106	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 200	W
		$T_C=100^\circ\text{C}$ 100	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.75	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ\text{C}/\text{W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{③}$	Avalanche Energy, Single Pulsed	440	mJ

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

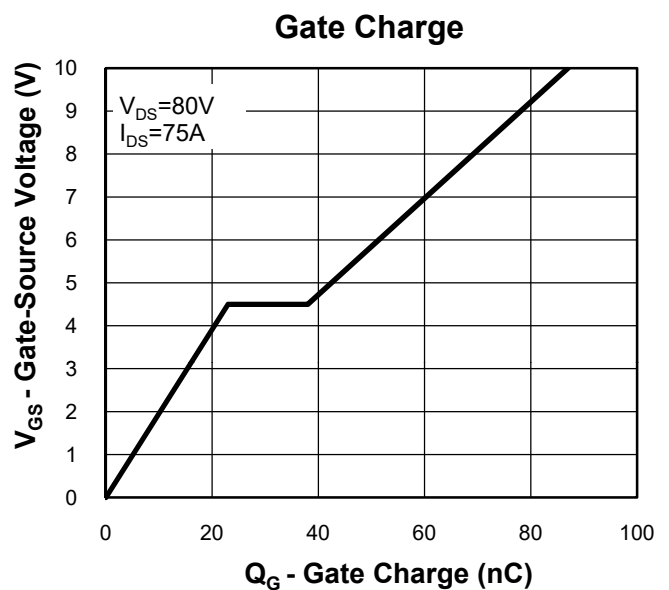
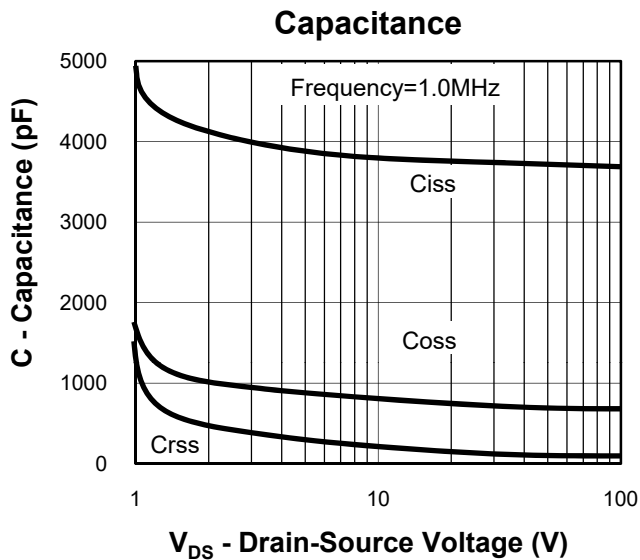
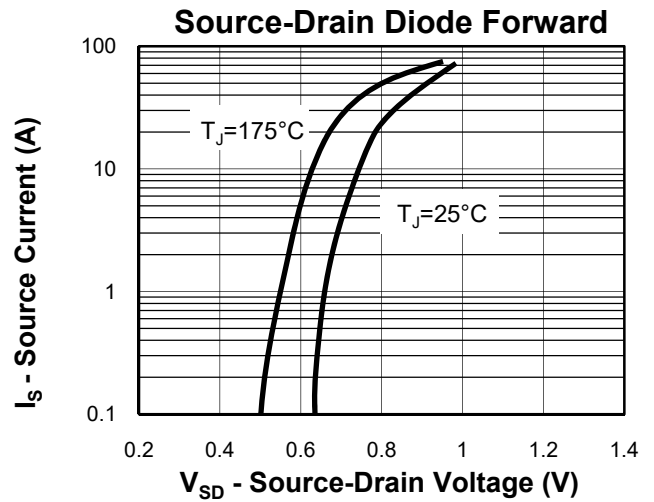
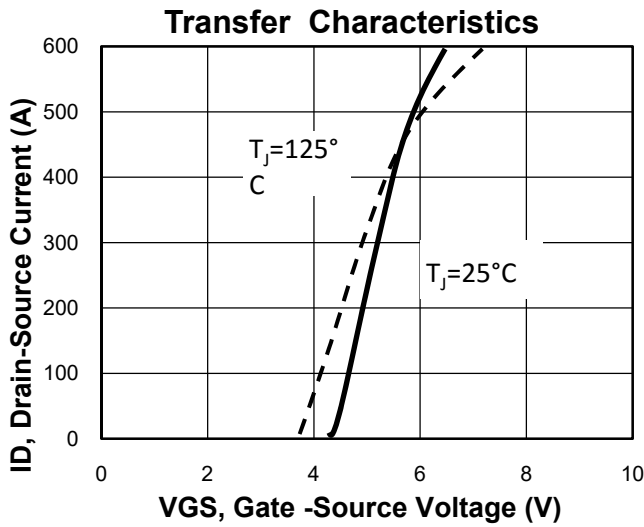
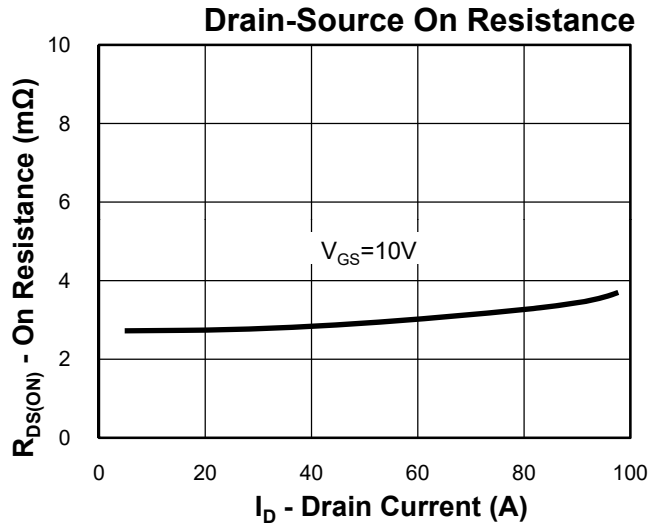
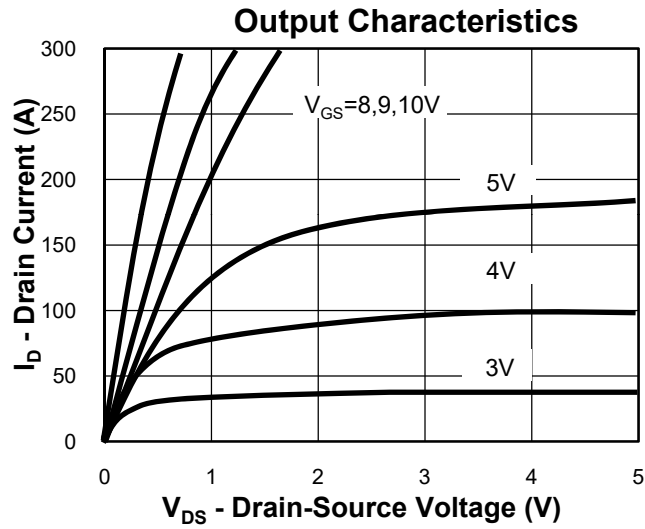
100V/150A	Parameter	Test Condition	RUH1H150R			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	100			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$			1	μA
		$T_J=125^\circ C$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2		4	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(4)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=75A$		3.2	4	m Ω
Diode Characteristics						
$V_{SD}^{(4)}$	Diode Forward Voltage	$I_{SD}=75A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=75A, di_{SD}/dt=100A/\mu s$		36		ns
Q_{rr}	Reverse Recovery Charge			28		nC
Dynamic Characteristics ⁽⁵⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		2.1		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=50V, \text{Frequency}=1.0MHz$		3650		pF
C_{oss}	Output Capacitance			750		
C_{riss}	Reverse Transfer Capacitance			27		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=50V, I_{DS}=75A, V_{GEN}=10V, R_G=4.7\Omega$		24		ns
t_r	Turn-on Rise Time			13		
$t_{d(OFF)}$	Turn-off Delay Time			49		
t_f	Turn-off Fall Time			17		
Gate Charge Characteristics ⁽⁵⁾						
Q_g	Total Gate Charge	$V_{DS}=80V, V_{GS}=10V, I_{DS}=75A$		87		nC
Q_{gs}	Gate-Source Charge			23		
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 75A.
 - ③ Limited by $T_{Jmax}, I_{AS}=42A, V_{DD}=60V, R_G=50\Omega$, 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.

Typical Characteristics

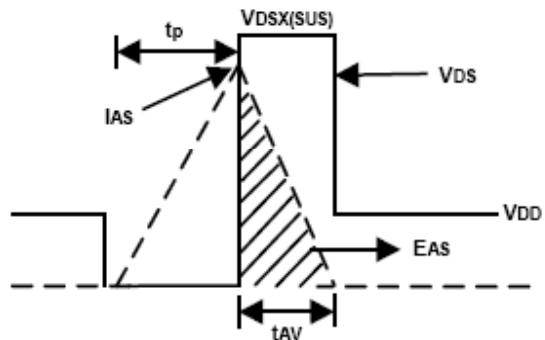
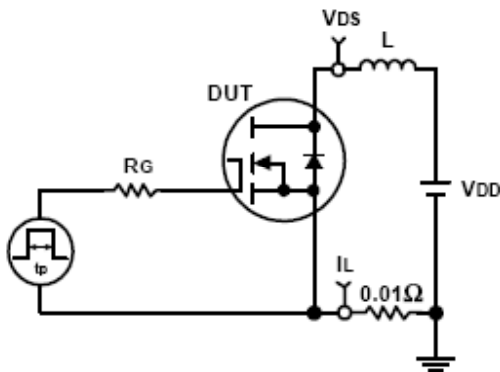


Typical Characteristics

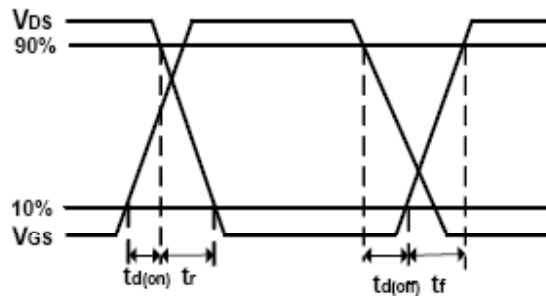
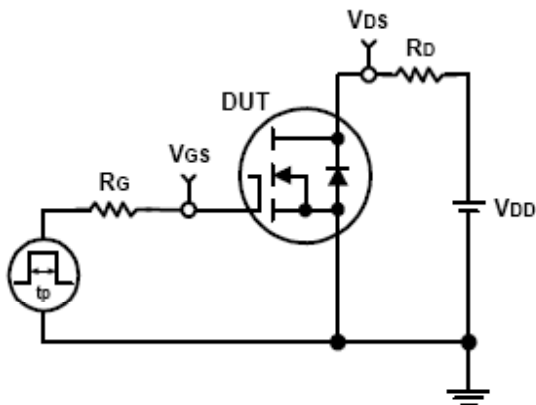


Avalanche Test Circuit and Waveforms

• 100V/150A,



Switching Time Test Circuit and Waveforms



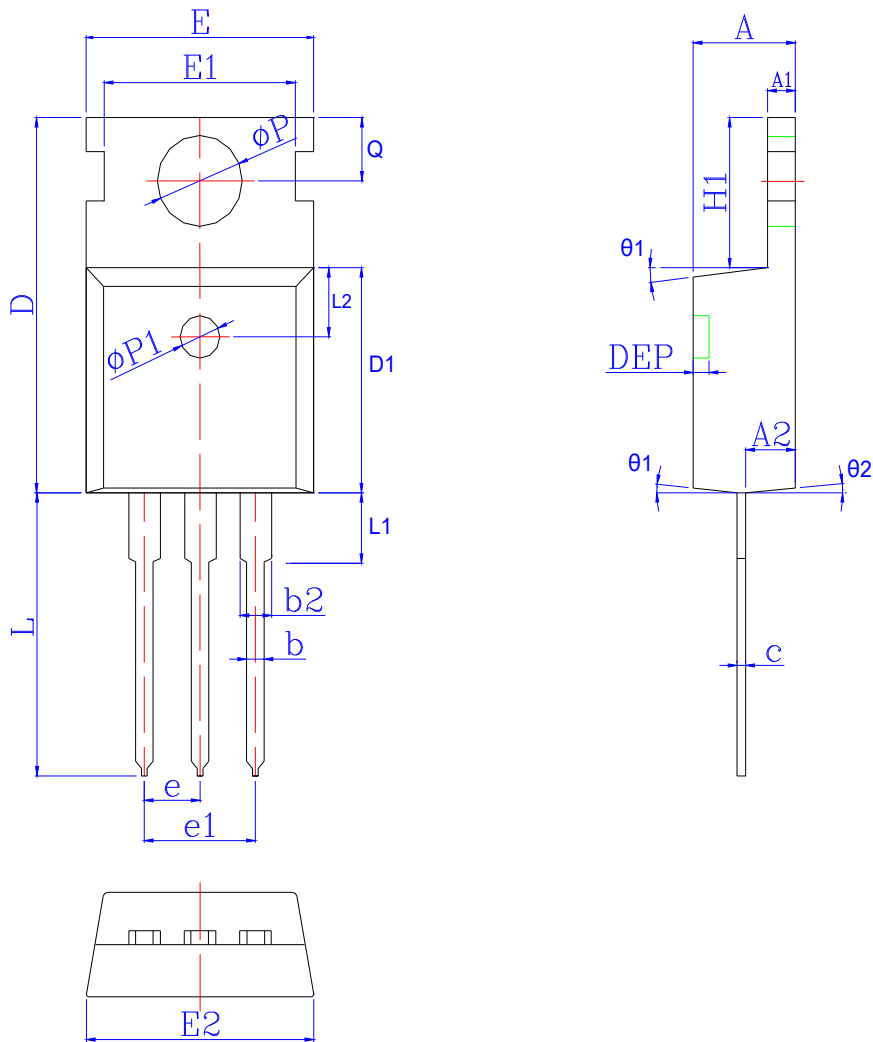
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RUH1H150R	RUH1H150R	TO220	Tube	50	-	-

Package Information

TO220

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1000/1450A



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.50	4.70	0.169	0.177	0.185	$\Phi p1$	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.15	1.30	1.40	0.045	0.051	0.055	e	2.54 BSC			0.10 BSC		
A2	1.90	2.25	2.60	0.075	0.089	0.102	e1	5.08 BSC			0.20 BSC		
b	0.60	0.80	1.00	0.024	0.031	0.039	H1	6.35	6.50	6.80	0.250	0.256	0.268
b2	1.17	1.28	1.72	0.046	0.050	0.068	L	12.70	13.18	13.65	0.500	0.519	0.537
c	0.40	0.50	0.60	0.016	0.020	0.024	L1	*	*	3.95	*	*	0.156
D	15.40	15.70	16.00	0.606	0.618	0.630	L2	2.50 REF			0.098 REF		
D1	8.96	9.21	9.46	0.353	0.363	0.372	Φp	3.50	3.60	3.75	0.138	0.142	0.148
DEP	*	*	0.30	*	*	0.012	Q	2.70	2.80	3.20	0.106	0.110	0.126
E	9.66	9.97	10.28	0.380	0.393	0.405	$\theta 1$	5°	7°	9°	5°	7°	9°
E1	*	8.70	*	*	0.343	*	$\theta 2$	1°	3°	5°	1°	3°	5°
E2	9.80	10.00	10.20	0.386	0.394	0.402							

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↵ **Worldwide Sales and Service:**
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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

4th Floor, Block 8, Changyuan New Material Port, Keyuan Middle Road, Science & Industry Park,
Nanshan District, Shenzhen, CHINA

TEL: (86-755) 8311-5334

FAX: (86-755) 8311-4278

E-mail: Sales-SZ@ruichips.com