

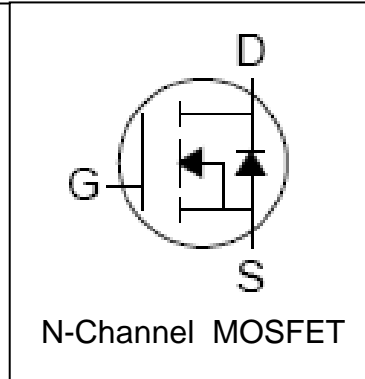
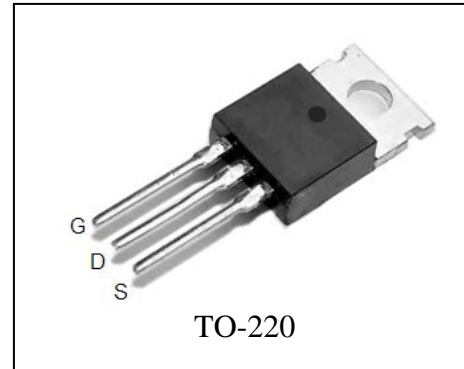
Features

- 100V/60A
 $R_{DS(ON)}=14m\Omega(Typ.) @ V_{GS}=10V$
- Ultra Low On-Resistance
- Exceptional dv/dt capability
- Fast Switching and Fully Avalanche Rated
- 100% avalanche tested
- Lead Free and Green Available

Applications

- Switching Application Systems

Pin Description



Absolute Maximum Ratings

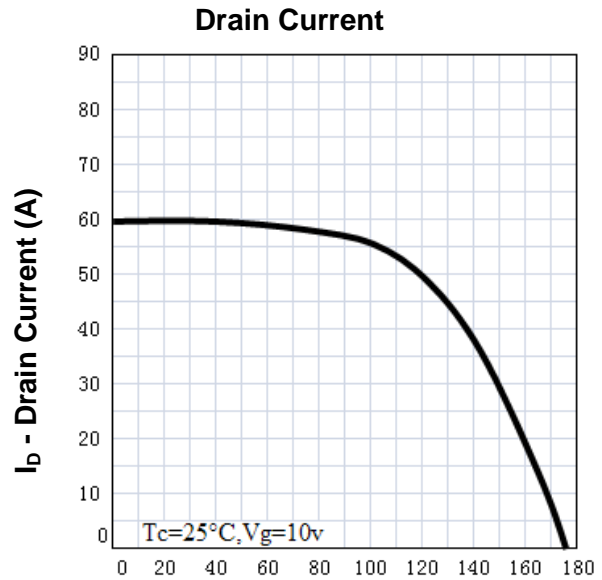
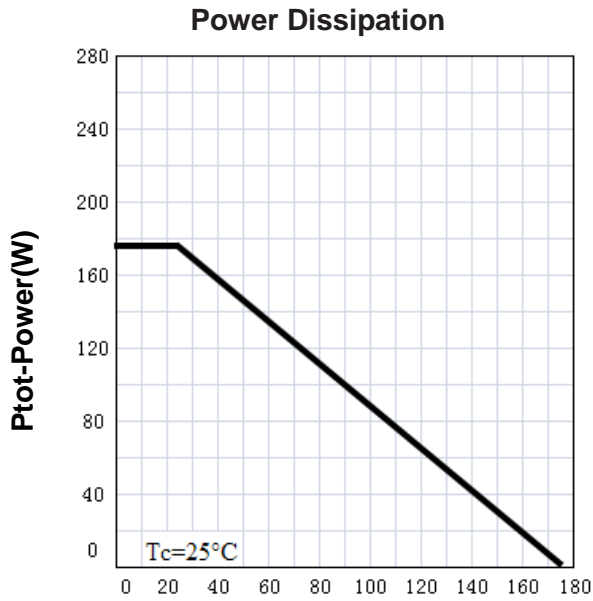
Symbol	Parameter		Rating	Unit
Common Ratings ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		± 25	
T_J	Maximum Junction Temperature		175	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55 to 175	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$	60 ^①	A
Mounted on Large Heat Sink				
I_{DP}	300 μs Pulsed Drain Current Tested	$T_C=25^\circ\text{C}$	240 ^②	A
I_D	Continue Drain Current	$T_C=25^\circ\text{C}$	60 ^①	
		$T_C=100^\circ\text{C}$	55	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	176	W
		$T_C=100^\circ\text{C}$	88	
$R_{\theta JC}$	Thermal Resistance -Junction to Case		0.85	$^\circ\text{C}/\text{W}$
Drain-Source Avalanche Ratings				
E_{AS} ^③	Avalanche Energy ,Single Pulsed		342	mJ

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

Symbol	Parameter	Test Condition	RU3710R			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	$V_{DS}=100V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			1	μA
					30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2	3	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	$V_{GS}=10V, I_{DS}=40A$		14	16	m Ω
Diode Characteristics						
$V_{SD}^{(4)}$	Diode Forward Voltage	$I_{SD}=40A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=40A, di_{SD}/dt=100A/\mu s$		90		ns
q_{rr}	Reverse Recovery Charge			180		nC
Dynamic Characteristics ⁽⁵⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		1.5		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=30V,$ Frequency=1.0MHz		3600		pF
C_{oss}	Output Capacitance			510		
C_{riss}	Reverse Transfer Capacitance			210		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=50V, R_L=1.7\Omega,$ $I_{DS}=30A, V_{GEN}=10V,$ $R_G=6\Omega$		13		ns
t_r	Turn-on Rise Time			25		
$t_{d(OFF)}$	Turn-off Delay Time			72		
t_f	Turn-off Fall Time			80		
Gate Charge Characteristics ⁽⁵⁾						
Q_g	Total Gate Charge	$V_{DS}=80V, V_{GS}=10V,$ $I_{DS}=60A$		85		nC
Q_{gs}	Gate-Source Charge			20		
Q_{gd}	Gate-Drain Charge			30		

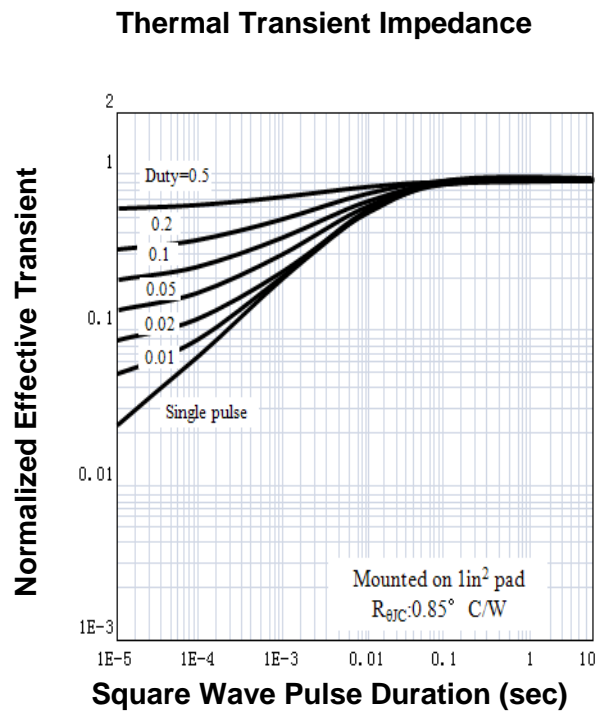
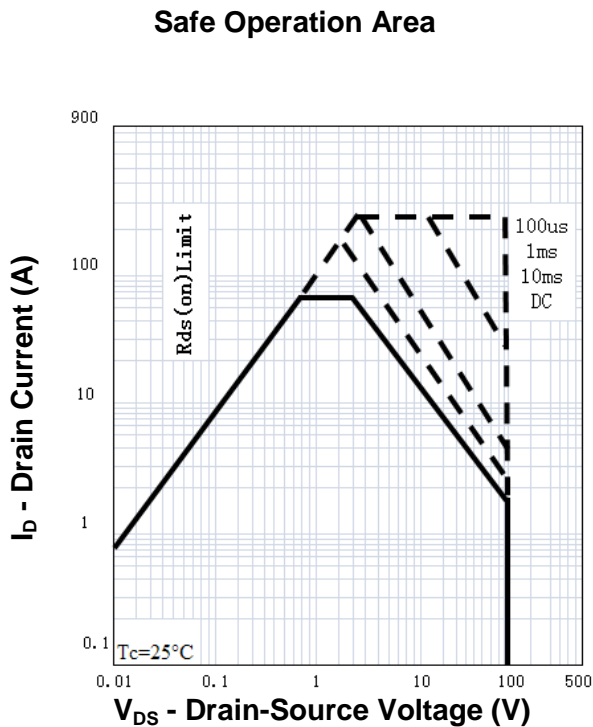
- Notes:
- ① Calculated continuous current based on maximum allowable junction temperature.
 - ② Pulse width limited by safe operating area.
 - ③ Limited by $T_{Jmax}, I_{AS}=37A, V_{DD}=60V, R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 - ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

Typical Characteristics



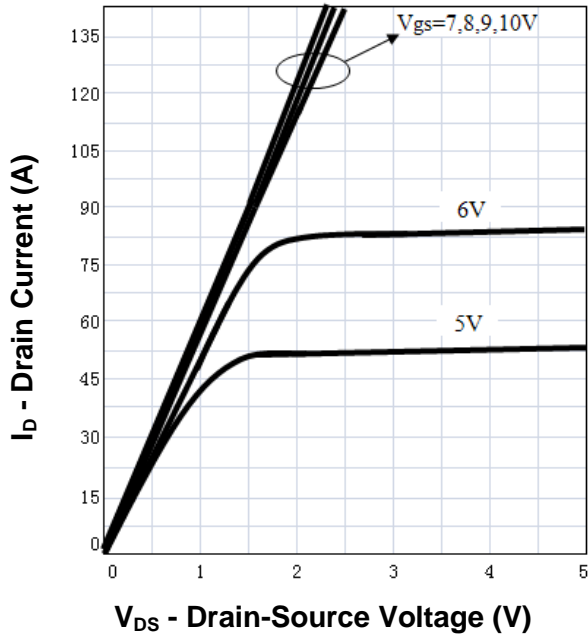
T_j - Junction Temperature (°C)

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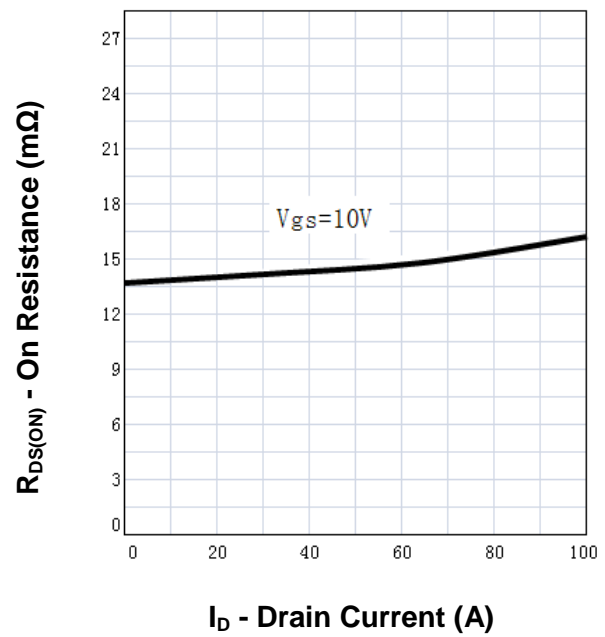


Typical Characteristics

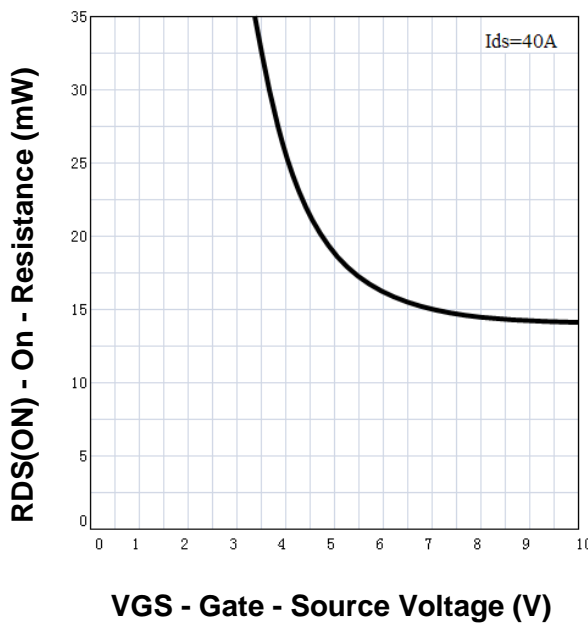
Output Characteristics



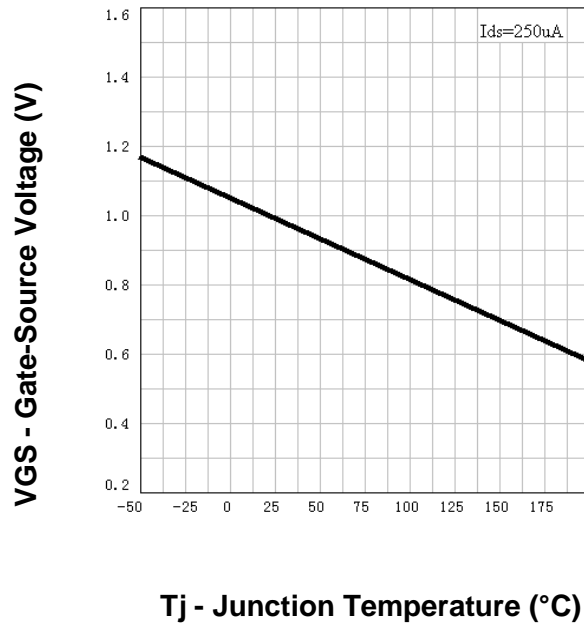
Drain-Source On Resistance



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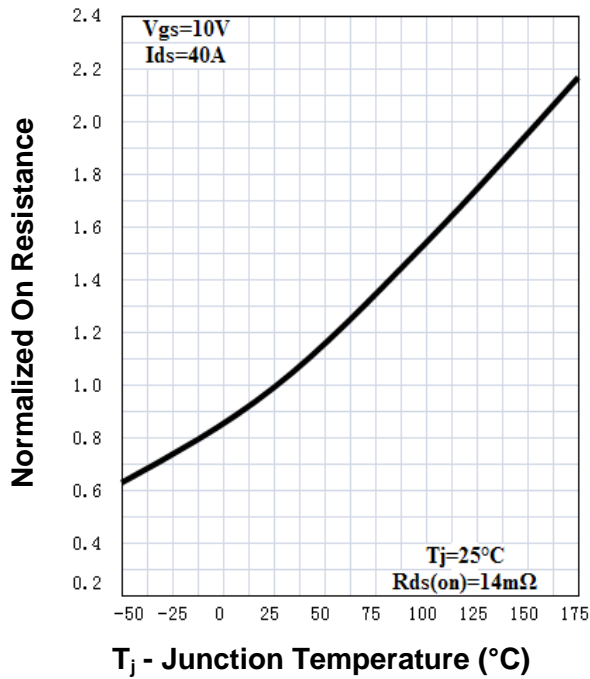


Gate Threshold Voltage

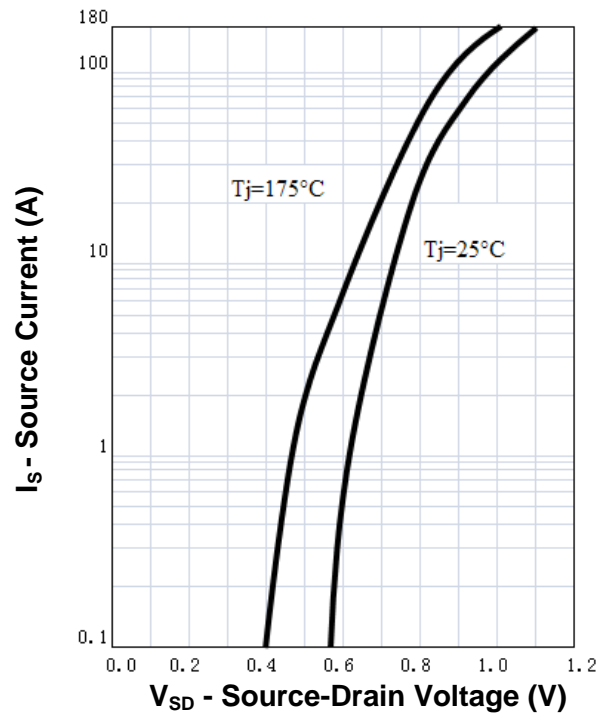


Typical Characteristics

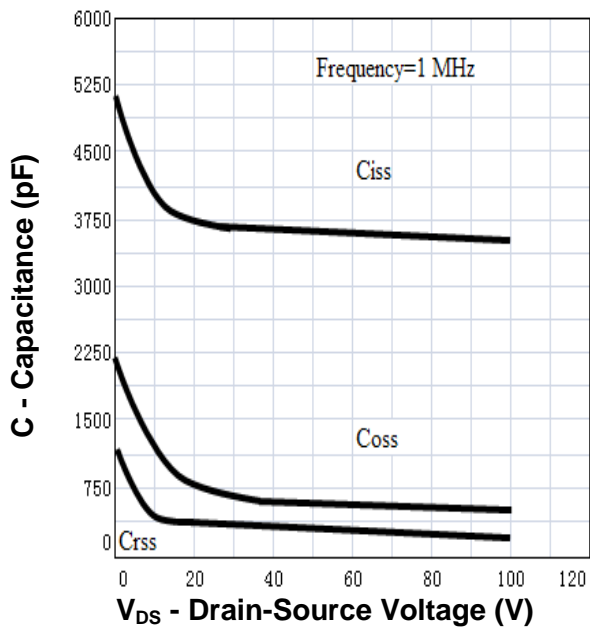
Drain-Source On Resistance



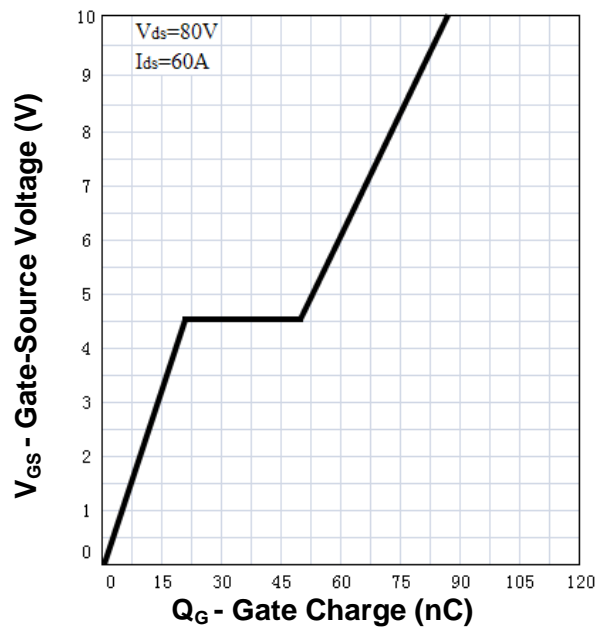
Source-Drain Diode Forward



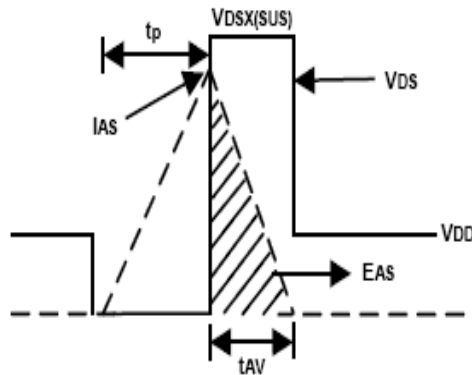
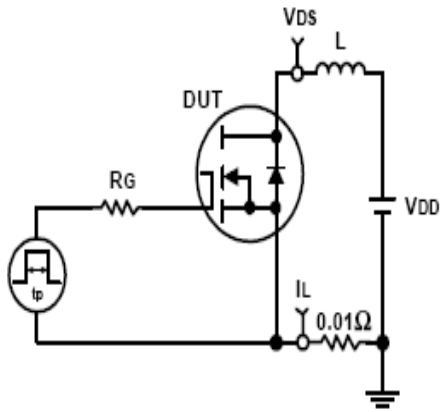
Capacitance



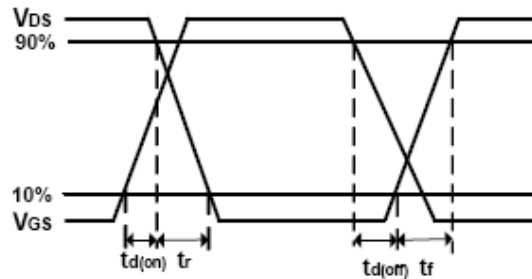
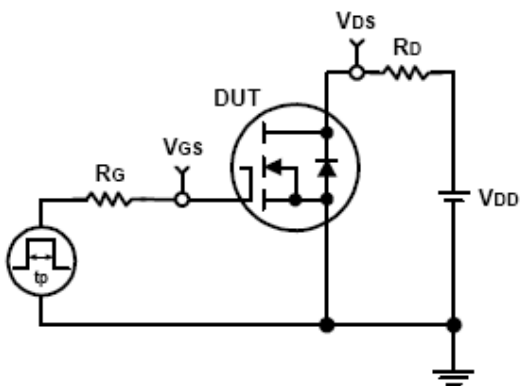
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

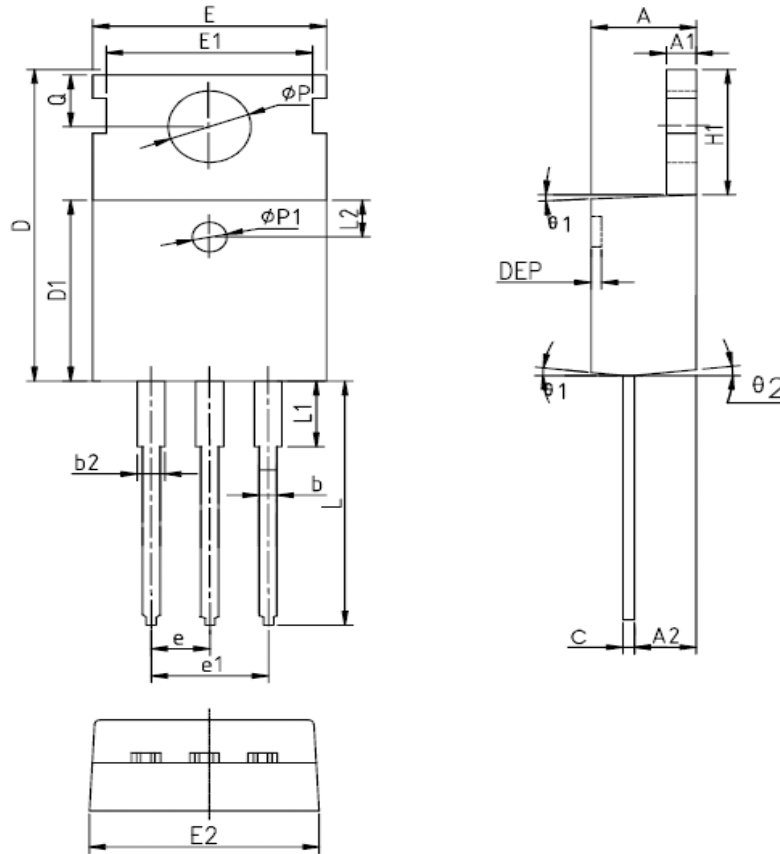


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU3710R	RU3710R	TO-220	Tube	50	-	-

Package Information

TO-220FB-3L



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185	$\phi p1$	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.27	1.30	1.33	0.050	0.051	0.052	e	2.54BSC			0.1BSC		
A2	2.35	2.40	2.50	0.093	0.094	0.098	e1	5.08BSC			0.2BSC		
b	0.77	-	0.90	0.030	-	0.035	H1	6.40	6.50	6.60	0.252	0.256	0.260
b2	1.23	-	1.36	0.048	-	0.054	L	12.75	-	13.17	0.502	-	0.519
C	0.48	0.50	0.52	0.019	0.020	0.021	L1	-	-	3.95	-	-	0.156
D	15.40	15.60	15.80	0.606	0.614	0.622	L2	2.50REF.			0.098REF.		
D1	9.00	9.10	9.20	0.354	0.358	0.362	ϕp	3.57	3.60	3.63	0.141	0.142	0.143
DEP	0.05	0.10	0.20	0.002	0.004	0.008	Q	2.73	2.80	2.87	0.107	0.110	0.113
E	9.70	9.90	10.10	0.382	0.389	0.398	$\theta 1$	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	0.401							

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

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