

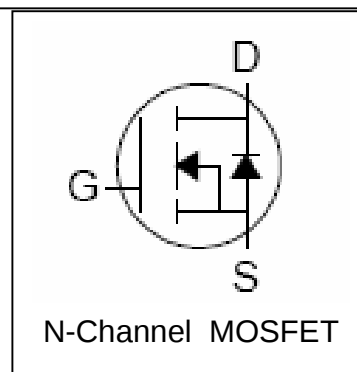
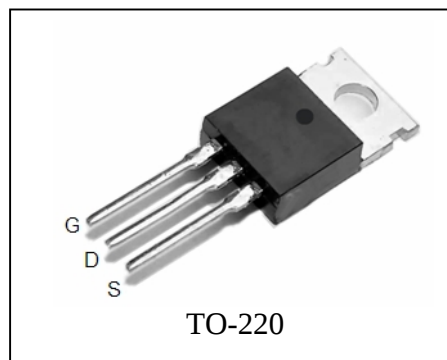
Features

- 600V/9.5A,
 $R_{DS(ON)} = 0.7\Omega$ (Typ.) @ $V_{GS} = 10V$
- Gate charge minimized
- Low C_{rss} (Typ. 20pF)
- Extremely high dv/dt capability
- 100% avalanche tested
- Lead Free and Green Available

Applications

- High efficiency switch mode power supplies
- Lighting

Pin Description



Absolute Maximum Ratings

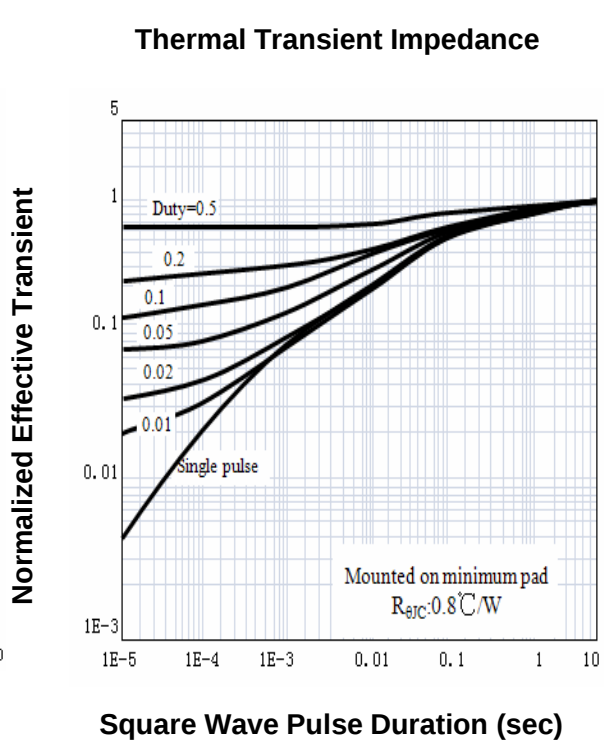
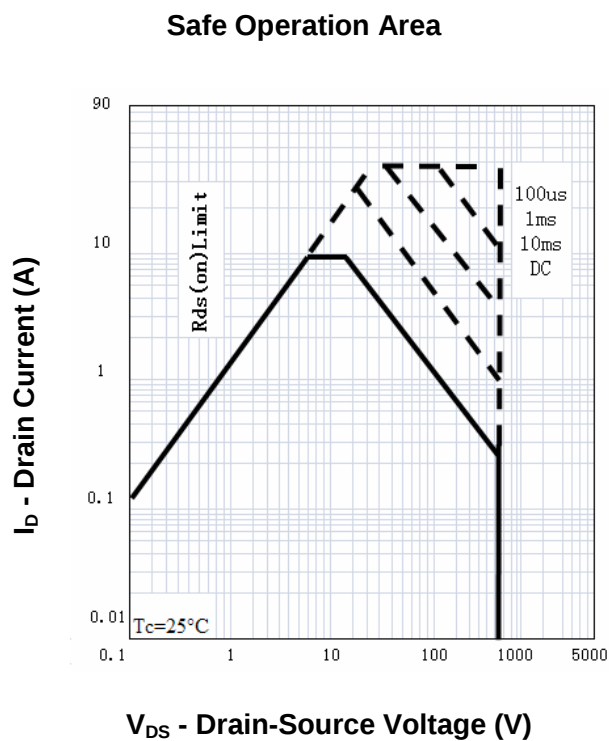
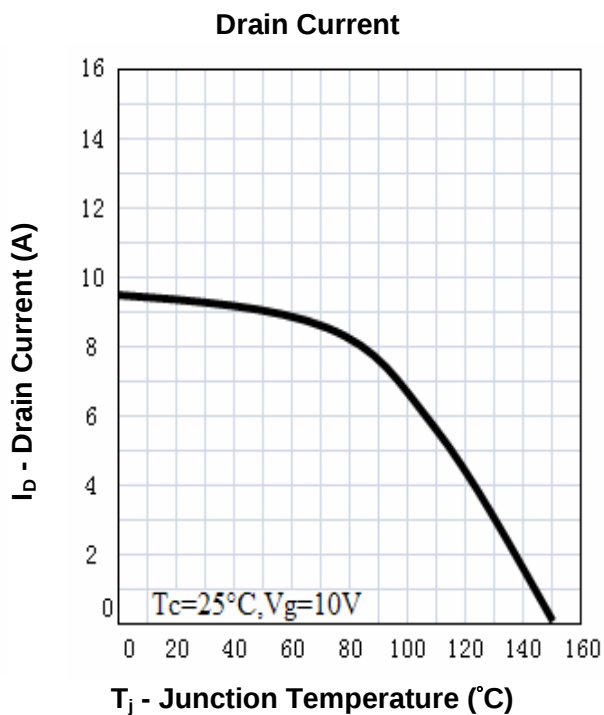
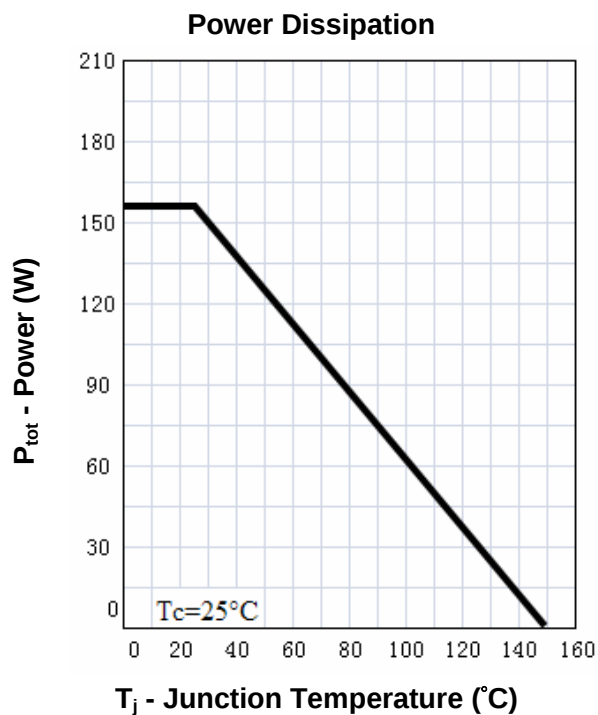
Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		600	V
V _{GSS}	Gate-Source Voltage		±30	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _C =25°C	9.5 ^①	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _C =25°C	38 ^②	A
I _D	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	9.5 ^①	A
		T _C =100°C	6.2	
P _D	Maximum Power Dissipation	T _C =25°C	156	W
		T _C =100°C	62	W
R _{θJC}	Thermal Resistance-Junction to Case		0.8	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		10	mJ

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

Symbol	Parameter	Test Condition	RU6H9R			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	600			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 600V, V _{GS} =0V			1	μA
		T _J =85°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3	4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±30V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^④	Drain-Source On-state Resistance	V _{GS} = 10V, I _{DS} =4.75A		0.7	0.8	Ω
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =9.5A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =9.5A, dI _{SD} /dt=100A/μs		450		ns
Q _{rr}	Reverse Recovery Charge			4.2		μC
Dynamic Characteristics ^⑤						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		10		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =300V, Frequency=1.0MHz		1570		pF
C _{oss}	Output Capacitance			190		
C _{rss}	Reverse Transfer Capacitance			20		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =300V, R _L =32Ω, I _{DS} =9.5A, V _{GEN} = 10V, R _G =25Ω		40		ns
t _r	Turn-on Rise Time			60		
t _{d(OFF)}	Turn-off Delay Time			180		
t _f	Turn-off Fall Time			80		
Gate Charge Characteristics ^⑤						
Q _g	Total Gate Charge	V _{DS} =480V, V _{GS} = 10V, I _{DS} =9.5A		30		nC
Q _{gs}	Gate-Source Charge			5		
Q _{gd}	Gate-Drain Charge			14		

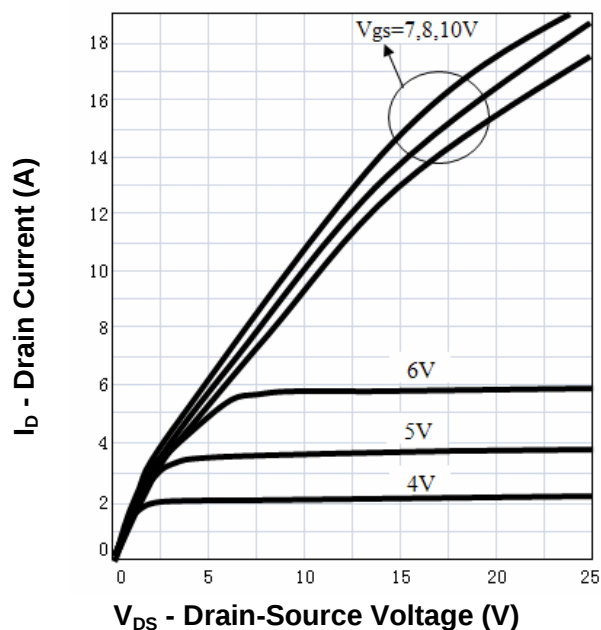
- Notes:
- ① Current limited by maximum junction temperature.
 - ② Pulse width limited by safe operating area.
 - ③ Limited by $T_{Jmax}, I_{AS}=4.5A, V_{DD}=100V, R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 - ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

Typical Characteristics

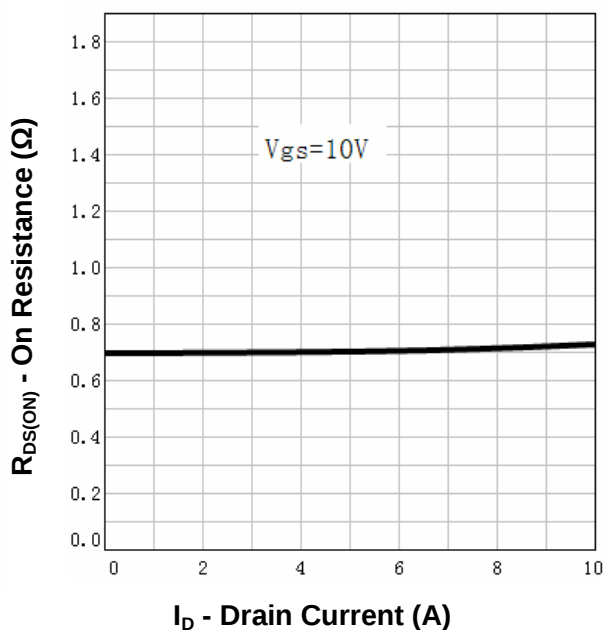


Typical Characteristics

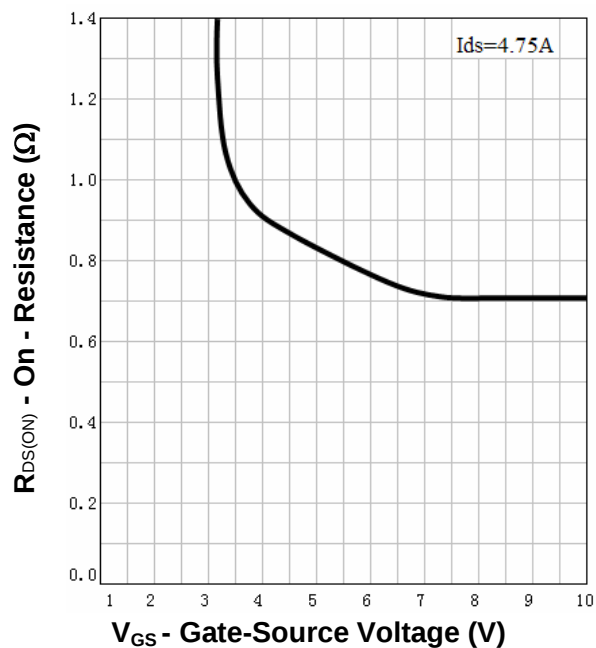
Output Characteristics



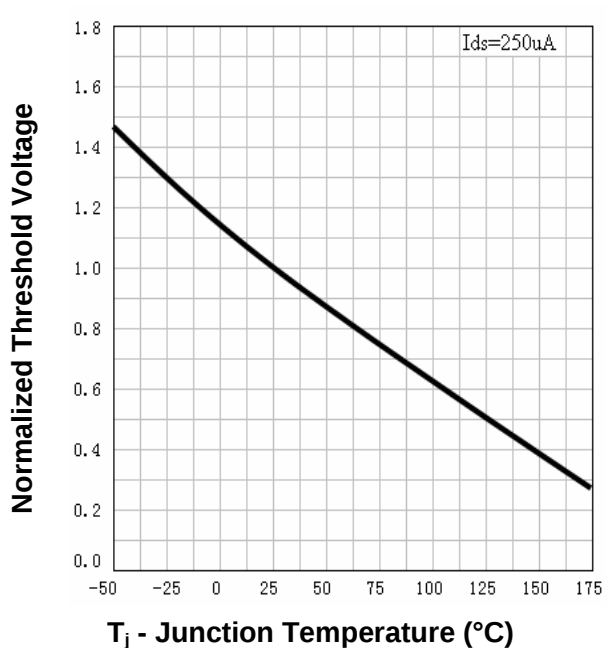
Drain-Source On Resistance



Drain-Source On Resistance

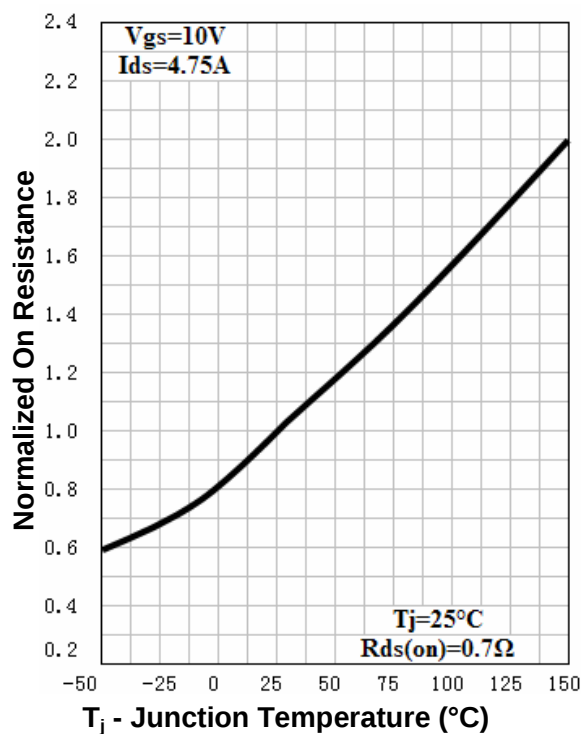


Gate Threshold Voltage

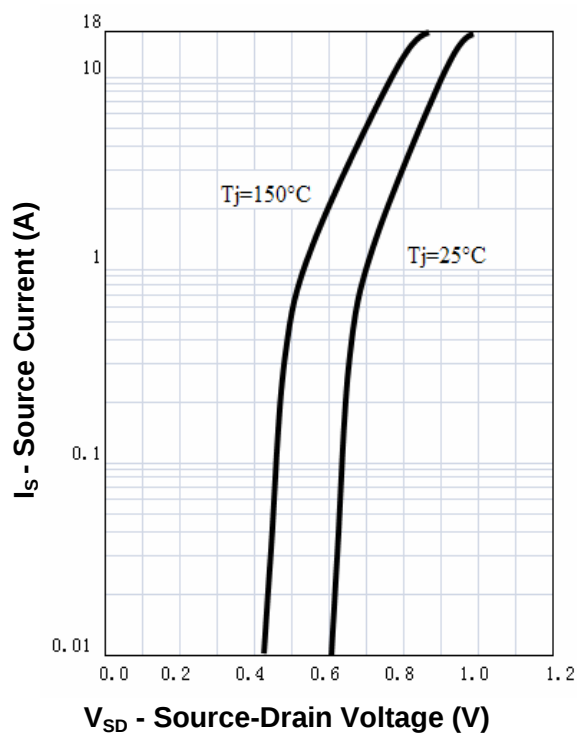


Typical Characteristics

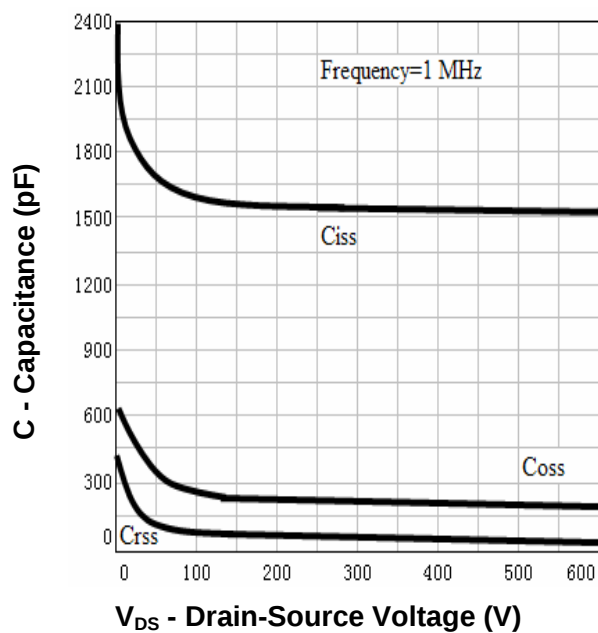
Drain-Source On Resistance



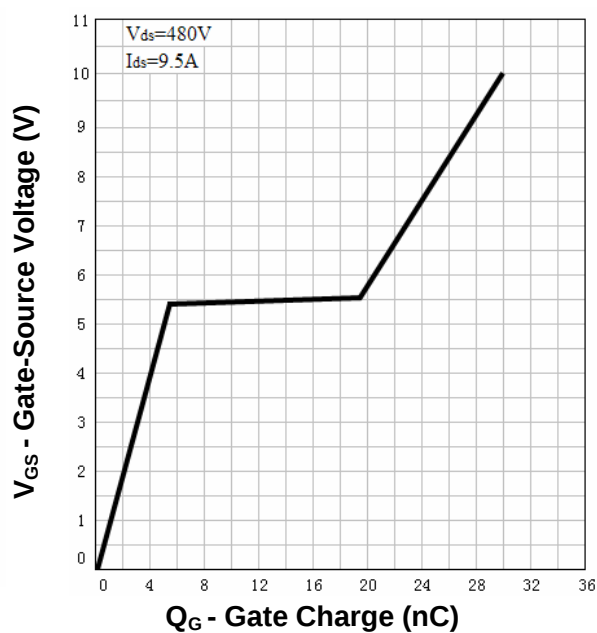
Source-Drain Diode Forward



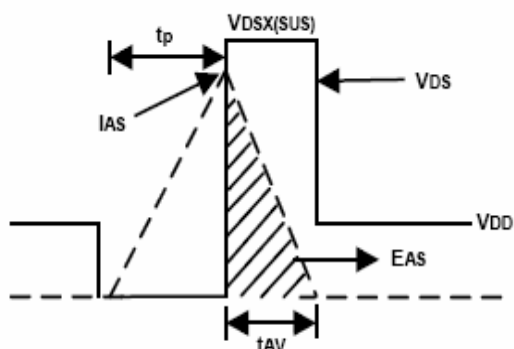
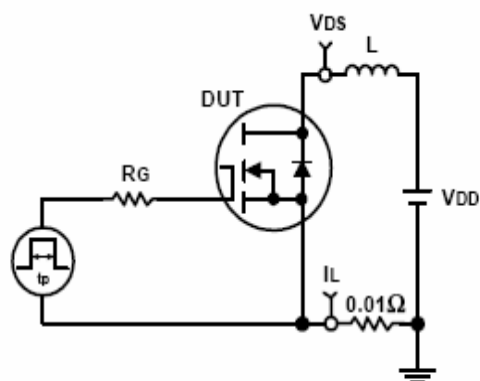
Capacitance



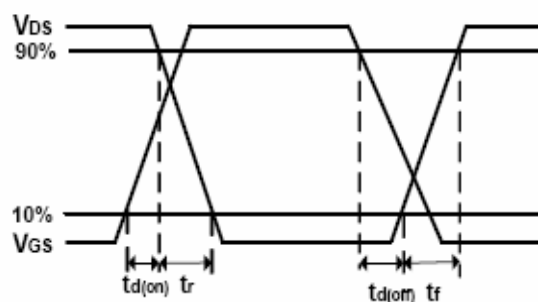
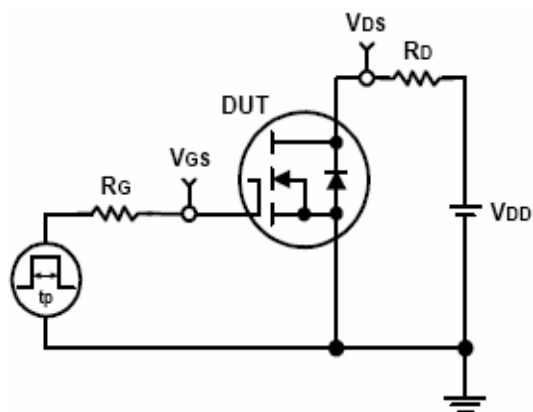
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

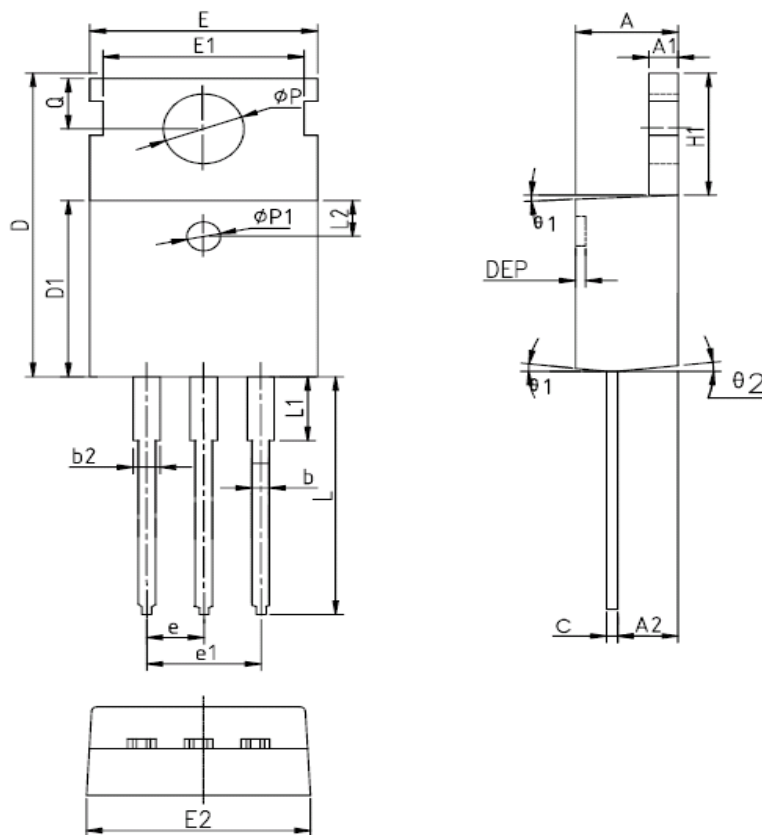


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU6H9R	RU6H9R	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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