

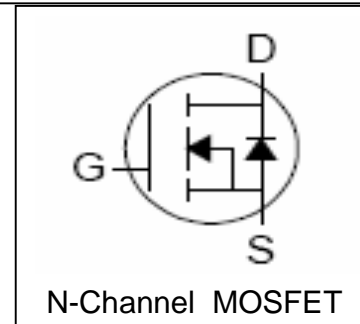
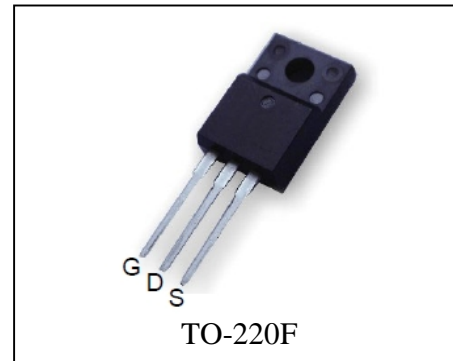
Features

- 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

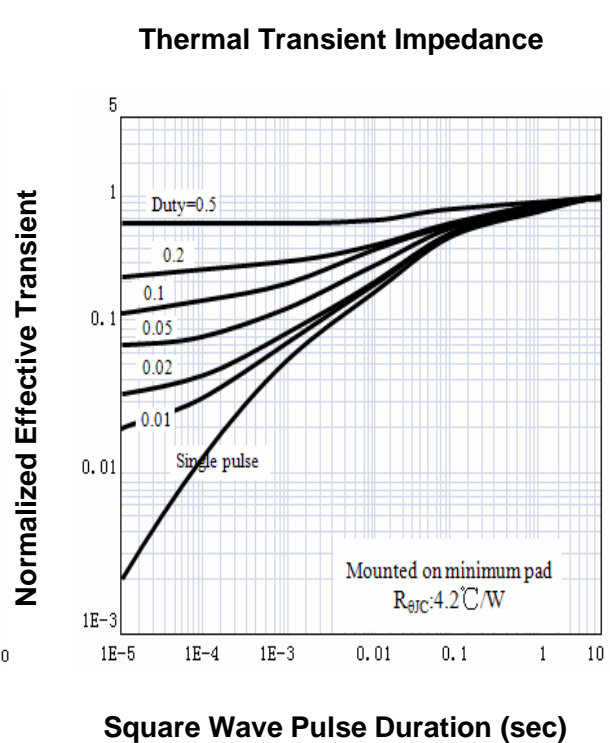
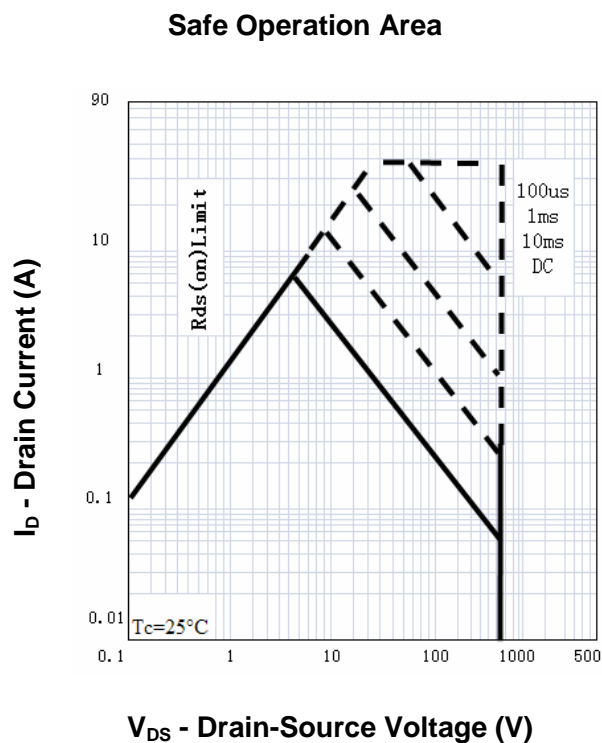
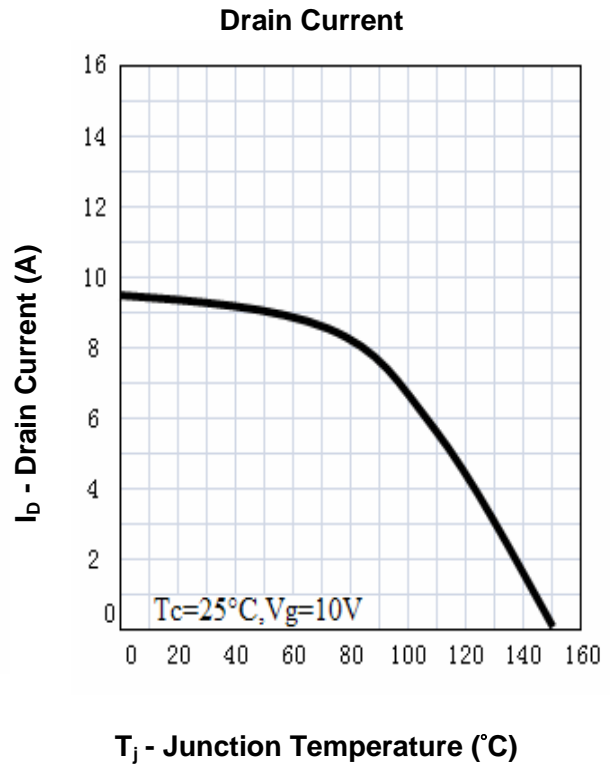
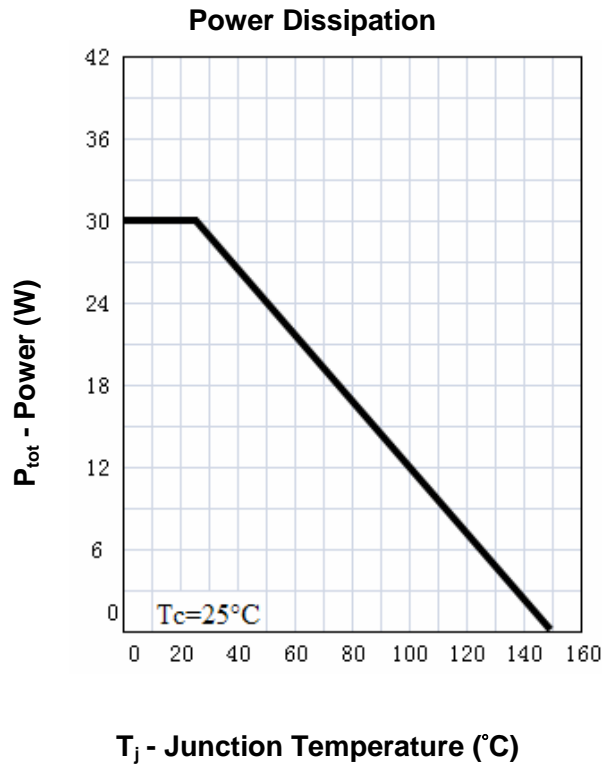
Symbol	Parameter	Rating	Unit
Common Ratings ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	600	V
V_{GSS}	Gate-Source Voltage	± 30	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C = 25^\circ\text{C}$ 9.5	A
Mounted on Large Heat Sink			
I_{DP}	300 μs Pulse Drain Current Tested	$T_C = 25^\circ\text{C}$ 38 ^①	A
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$ 9.5 ^①	A
		$T_C = 100^\circ\text{C}$ 6.2 ^①	
P_D	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$ 30	W
		$T_C = 100^\circ\text{C}$ 12	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	4.2	$^\circ\text{C/W}$
Drain-Source Avalanche Ratings			
E_{AS} ^②	Avalanche Energy, Single Pulsed	10	mJ

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

Symbol	Parameter	Test Condition	RU6H9P			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	600			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=600V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			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	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(3)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=4.75A$		0.7	0.8	Ω
Diode Characteristics						
$V_{SD}^{(3)}$	Diode Forward Voltage	$I_{SD}=9.5A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=9.5A, dI_{SD}/dt=100A/\mu s$		450		ns
Q_{rr}	Reverse Recovery Charge			4.2		μC
Dynamic Characteristics ⁽⁴⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		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	$V_{DD}=300V, R_L=32\Omega,$ $I_{DS}=9.5A, V_{GEN}=10V,$ $R_G=25\Omega$		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 ⁽⁴⁾						
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		

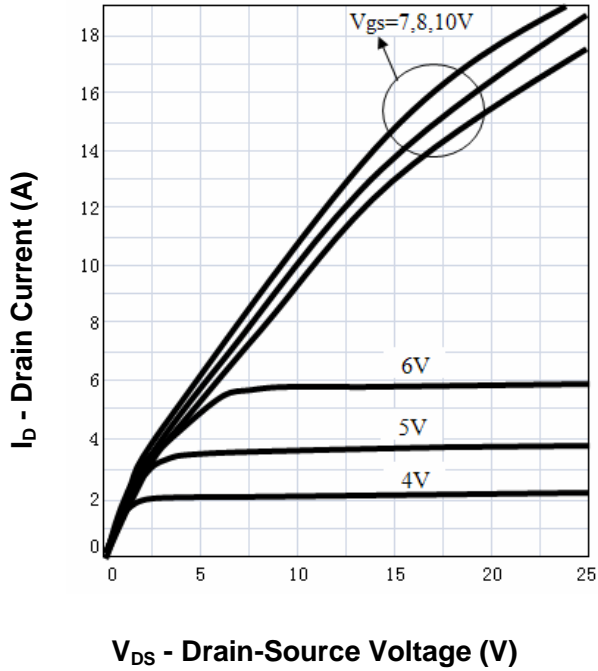
- Notes: ① Current limited by maximum junction temperature.
 ② Limited by $T_{Jmax}, I_{AS}=4.5A, V_{DD}=100V, R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 ③ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ④ Guaranteed by design, not subject to production testing.

Typical Characteristics

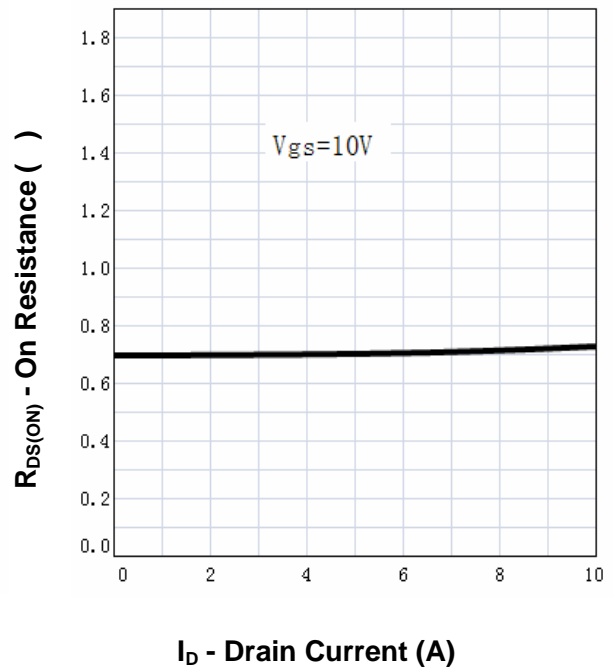


Typical Characteristics

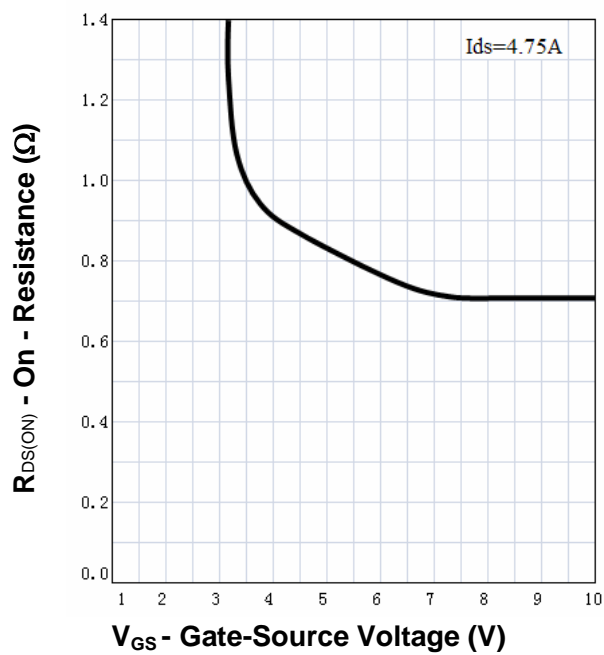
Output Characteristics



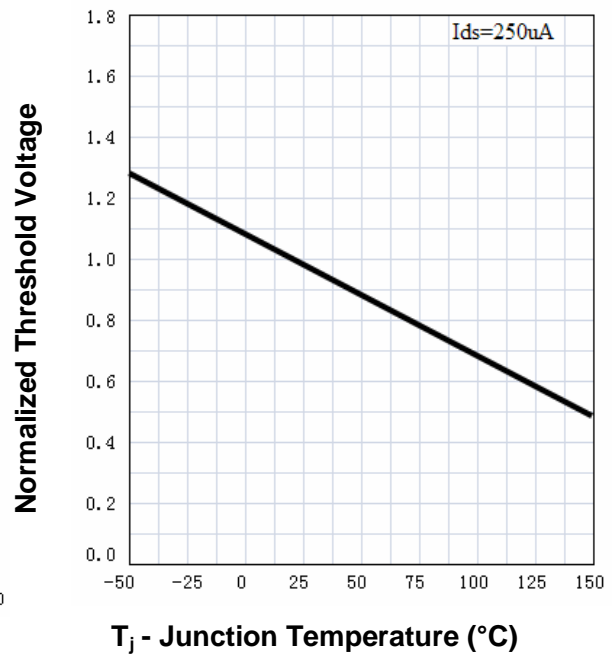
Drain-Source On Resistance



Drain-Source On Resistance

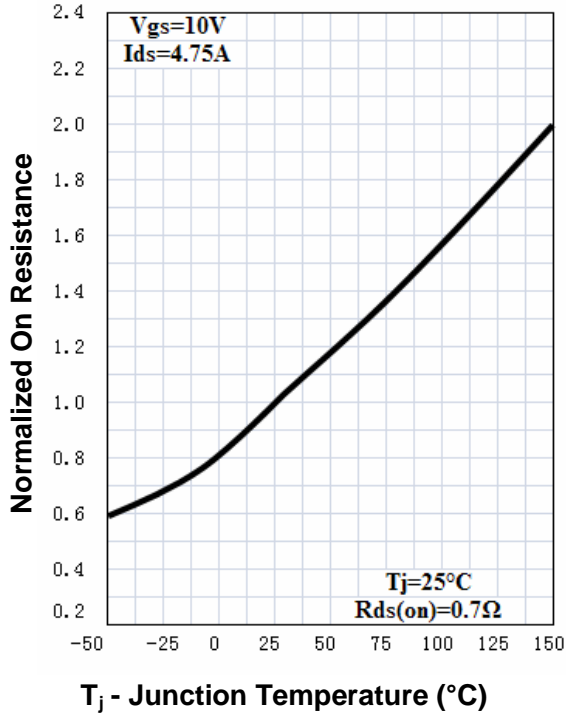


Gate Threshold Voltage

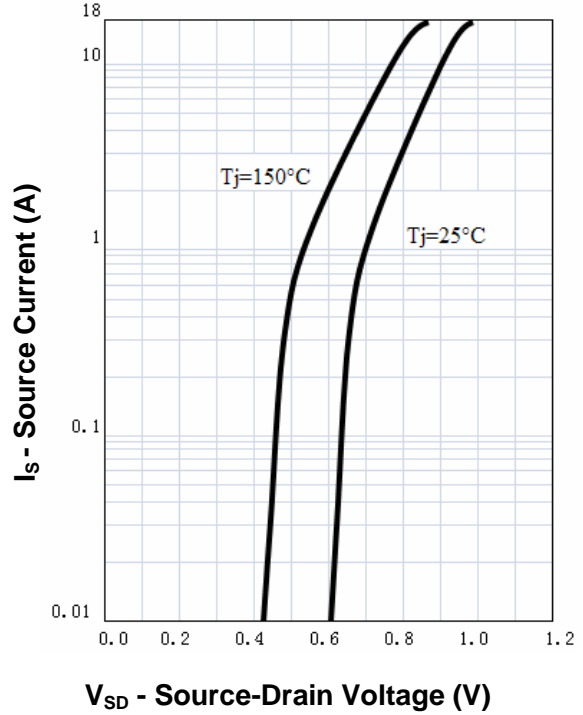


Typical Characteristics

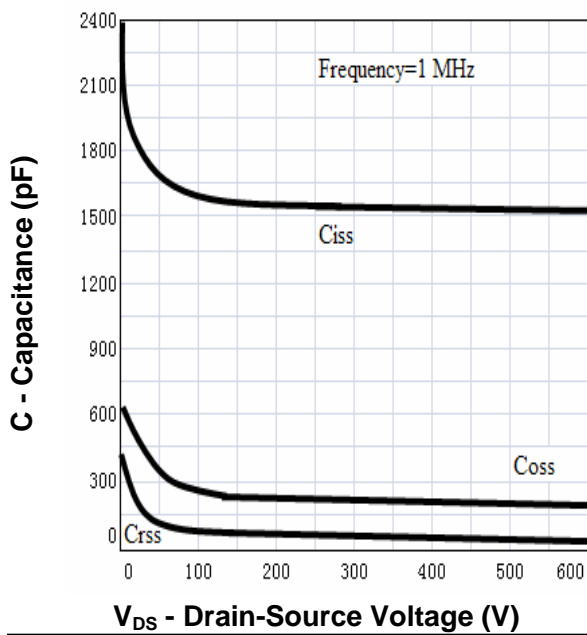
Drain-Source On Resistance



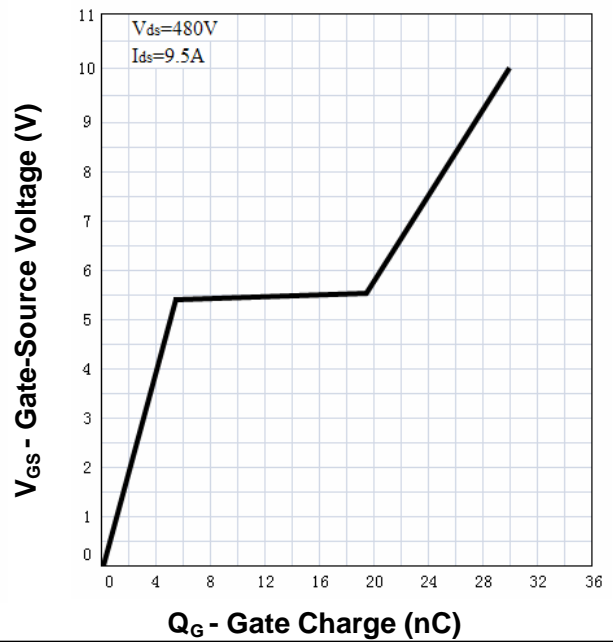
Source-Drain Diode Forward



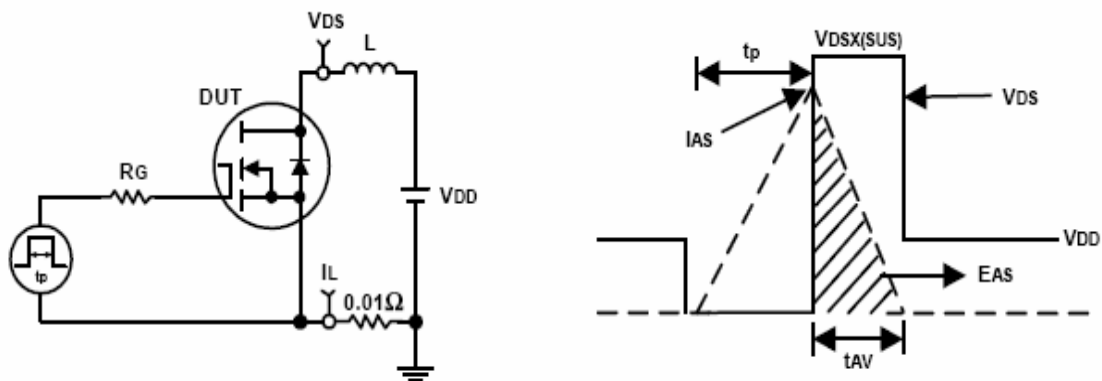
Capacitance



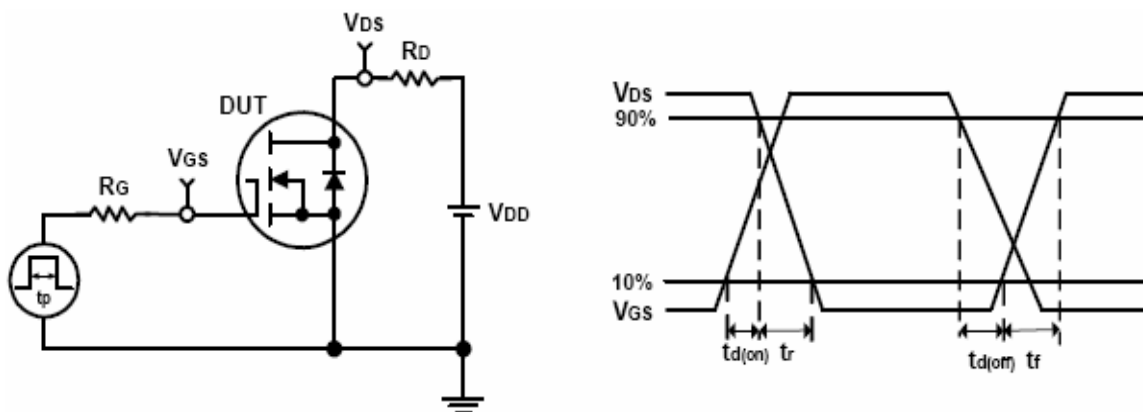
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

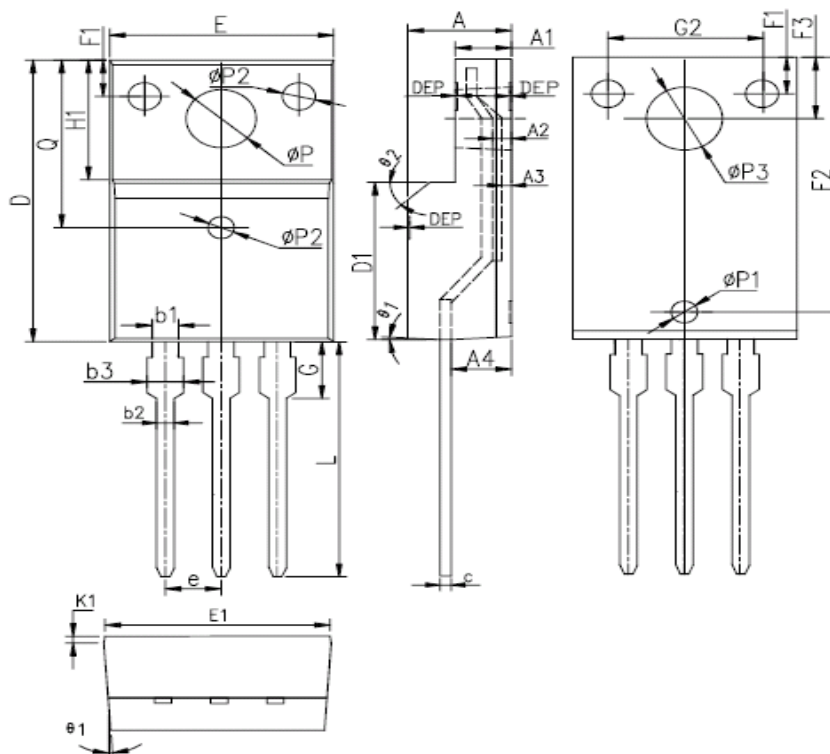


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU6H9P	RU6H9P	TO-220F	Tube	50	-	-

Package Information

TO-220F-3L



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
E	9.96	10.16	10.36	0.392	0.400	0.408	Øp3	-	3.450	-	-	0.136	-
A	4.50	4.70	4.90	0.177	0.185	0.193	θ 1	5°	7°	9°	5°	7°	9°
A1	2.34	2.54	2.74	0.092	0.100	0.108	θ 2	-	45°	-	-	45°	-
A2	0.95	1.05	1.15	0.037	0.041	0.045	DEP	0.05	0.10	0.15	0.002	0.004	0.006
A3	0.42	0.52	0.62	0.017	0.020	0.024	F1	1.90	2.00	2.10	0.075	0.079	0.083
A4	2.65	2.75	2.85	0.104	0.108	0.112	F2	13.61	13.81	14.01	0.536	0.544	0.552
c	-	0.50	-	-	0.020	-	F3	3.20	3.30	3.40	0.126	0.130	0.134
D	15.67	15.87	16.07	0.617	0.625	0.633	G	3.25	3.45	3.65	0.128	0.136	0.144
Q	8.80	9.00	9.20	0.346	0.354	0.362	G1	5.90	6.00	6.10	0.232	0.236	0.240
H1	6.48	6.68	6.88	0.255	0.263	0.271	G2	6.90	7.00	7.10	0.272	0.276	0.280
e	2.54BSC			0.1BSC			b1	1.17	1.20	1.24	0.046	0.047	0.048
Øp	-	3.183	-	-	0.125	-	b2	0.77	0.8	0.85	0.030	0.031	0.033
L	12.78	12.98	13.18	0.503	0.511	0.519	b3	1.10	1.30	1.50	0.043	0.051	0.059
D1	8.99	9.19	9.39	0.354	0.362	0.370	E1	9.8	10.00	10.20	0.386	0.394	0.412
Øp1	1.40	1.50	1.60	0.055	0.059	0.063	K1	0.75	0.8	0.85	0.030	0.031	0.033
Øp2	1.15	1.20	1.25	0.045	0.047	0.049							

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

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