

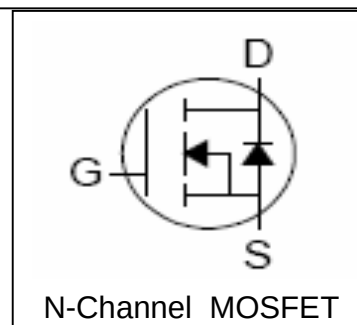
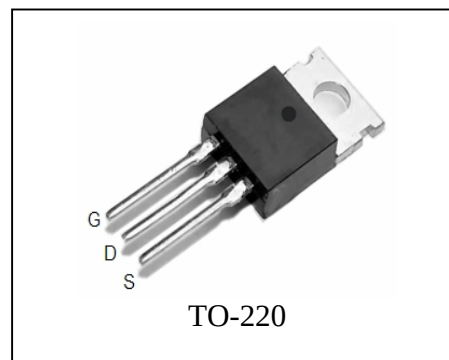
Features

- 600V/7A,
 $R_{DS(ON)} = 1\Omega$ (Typ.) @ $V_{GS} = 10V$
- Gate charge minimized
- Low C_{rss} (Typ. 16pF)
- 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

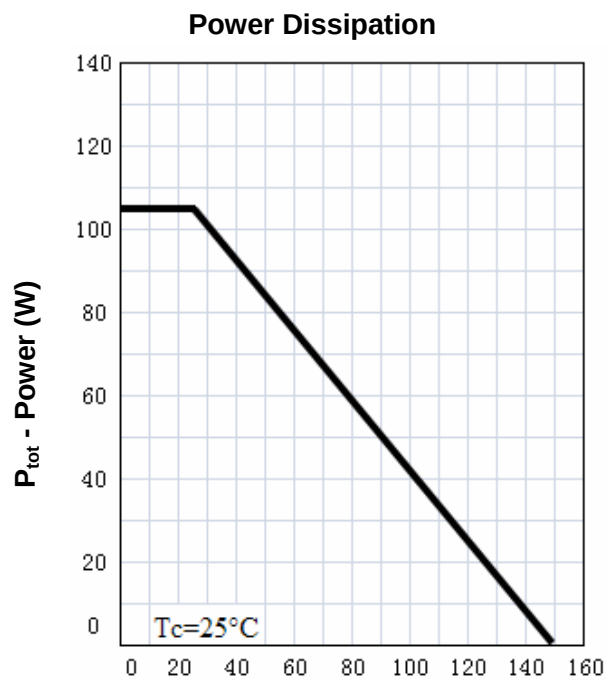
Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		600	V
V _{GSS}	Gate-Source Voltage		±30	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _C =25°C	7	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _C =25°C	28 ^①	A
I _D	Continuous Drain Current	T _C =25°C	7 ^①	A
		T _C =100°C	4.5 ^①	
P _D	Maximum Power Dissipation	T _C =25°C	104	W
		T _C =100°C	42	
R _{θJC}	Thermal Resistance-Junction to Case		1.2	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^②	Avalanche Energy, Single Pulsed		98	mJ

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

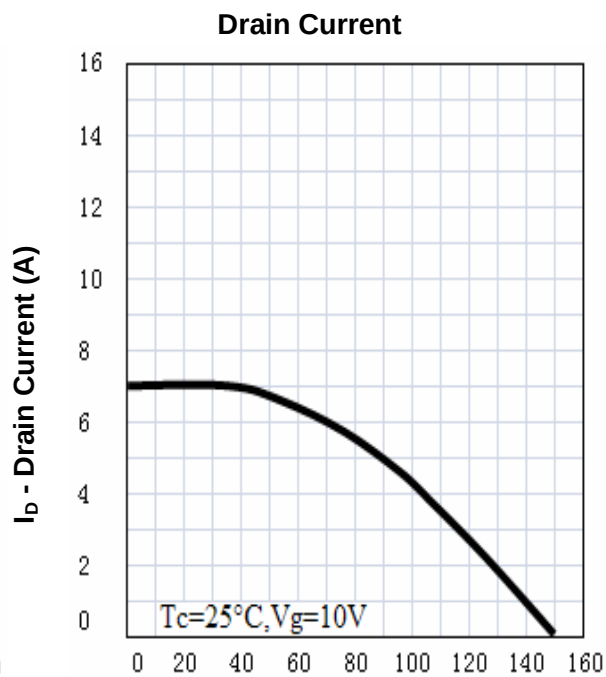
Symbol	Parameter	Test Condition	RU6H7R			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	600			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =600V, V _{GS} =0V			1	μA
		T _J =85°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{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)} ^③	Drain-Source On-state Resistance	V _{GS} = 10V, I _{DS} =3.5A		1	1.2	Ω
Diode Characteristics						
V _{SD} ^③	Diode Forward Voltage	I _{SD} =7A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =7A, dI _{SD} /dt=100A/μs		320		ns
Q _{rr}	Reverse Recovery Charge			2.4		μC
Dynamic Characteristics ^④						
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		1100		pF
C _{oss}	Output Capacitance			135		
C _{rss}	Reverse Transfer Capacitance			16		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =300V, R _L =42Ω, I _{DS} =7A, V _{GEN} =10V, R _G =25Ω		30		ns
t _r	Turn-on Rise Time			80		
t _{d(OFF)}	Turn-off Delay Time			65		
t _f	Turn-off Fall Time			60		
Gate Charge Characteristics ^④						
Q _g	Total Gate Charge	V _{DS} =480V, V _{GS} =10V, I _{DS} =7A		29		nC
Q _{gs}	Gate-Source Charge			7		
Q _{gd}	Gate-Drain Charge			15		

- Notes: ① Current limited by maximum junction temperature.
 ② Limited by $T_{Jmax}, I_{AS}=14A, V_{DD}=100V, R_G=50\Omega$, 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.

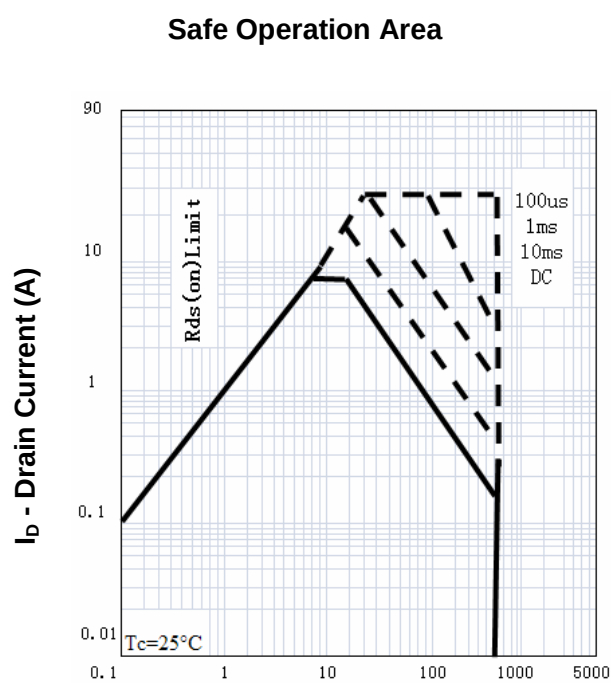
Typical Characteristics



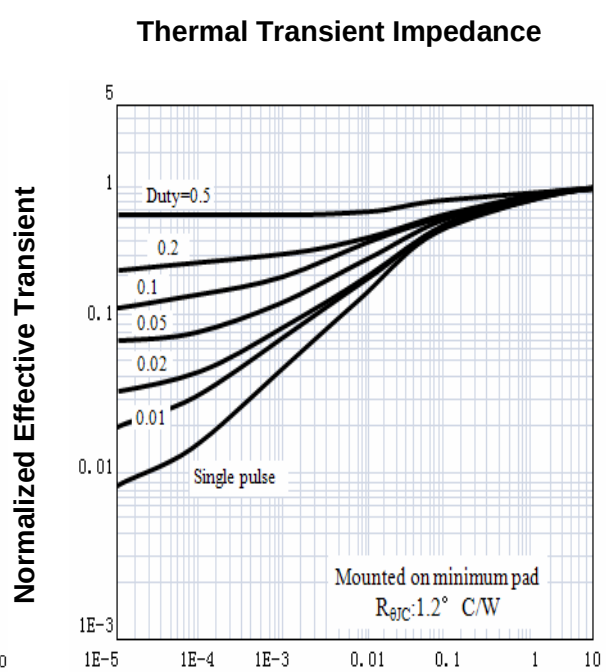
T_j - Junction Temperature (°C)



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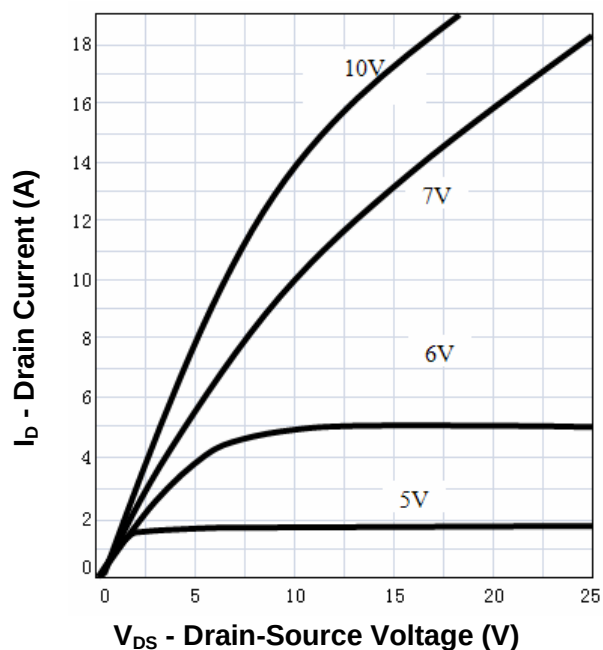
V_{DS} - Drain-Source Voltage (V)



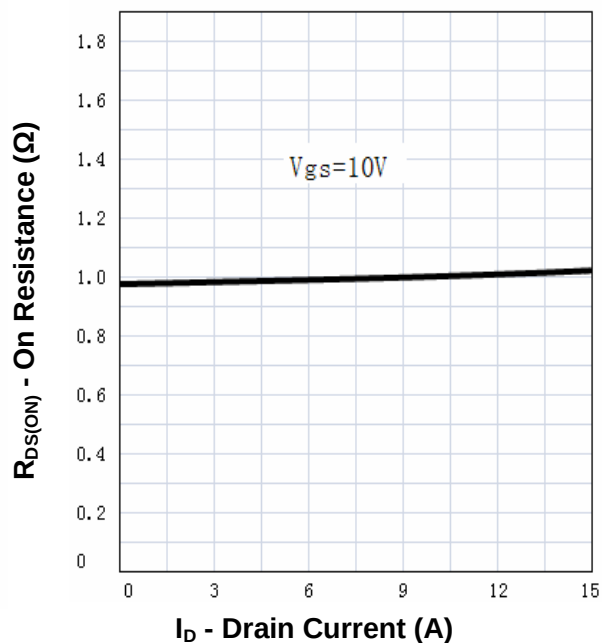
Square Wave Pulse Duration (sec)

Typical Characteristics

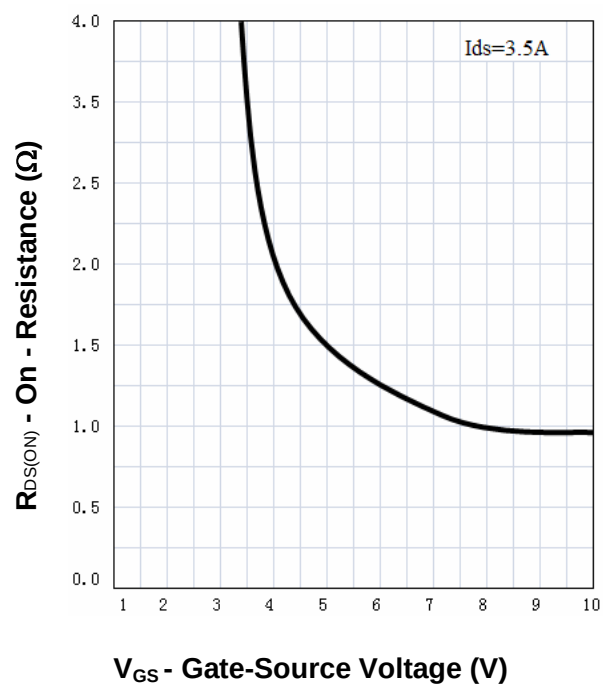
Output Characteristics



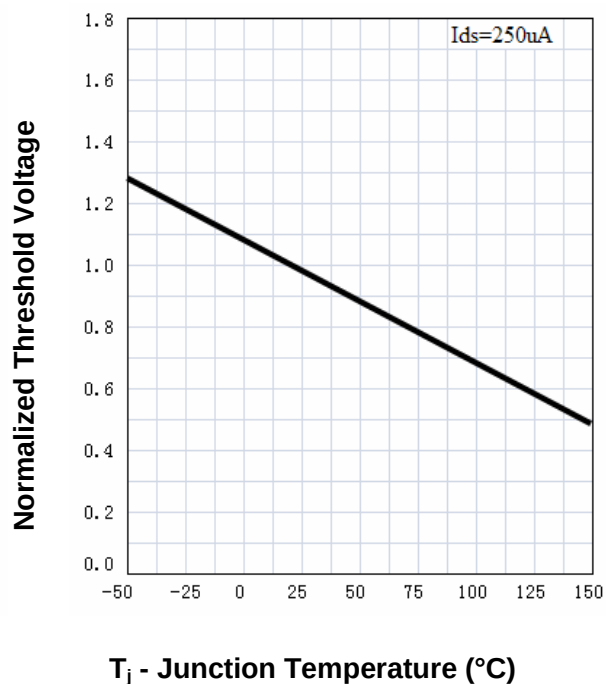
Drain-Source On Resistance



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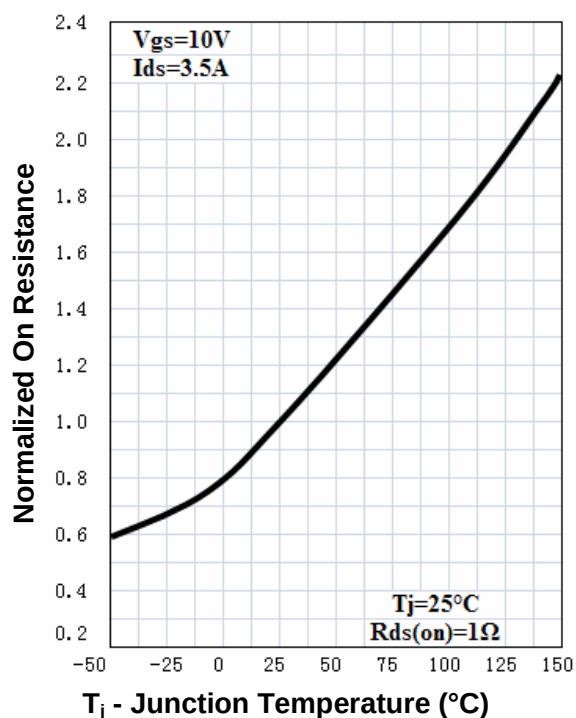


Gate Threshold Voltage

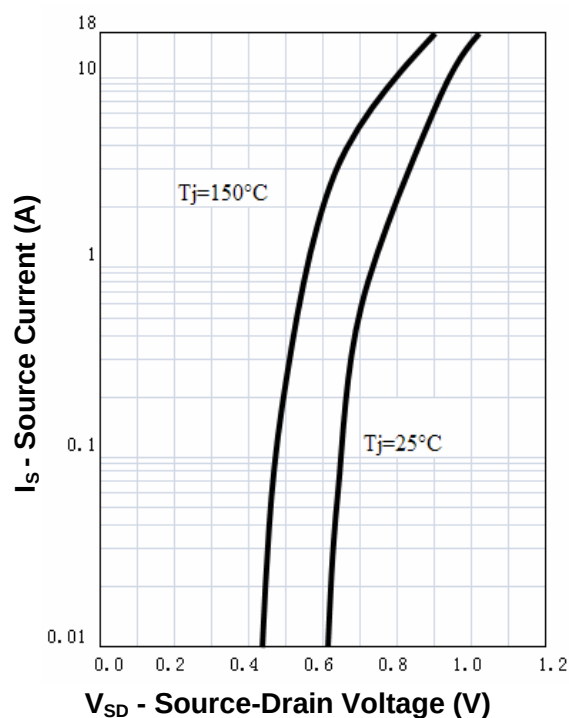


Typical Characteristics

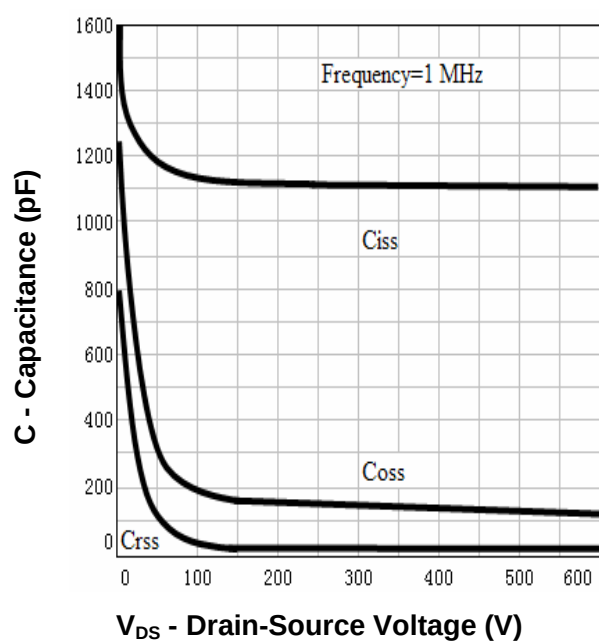
Drain-Source On Resistance



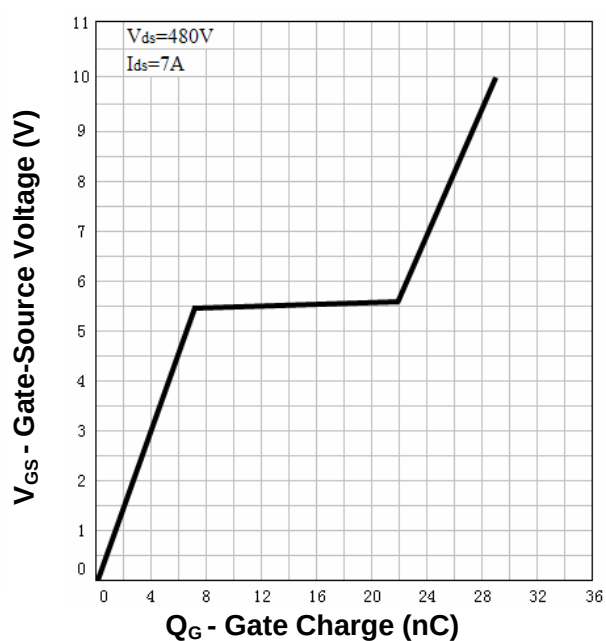
Source-Drain Diode Forward



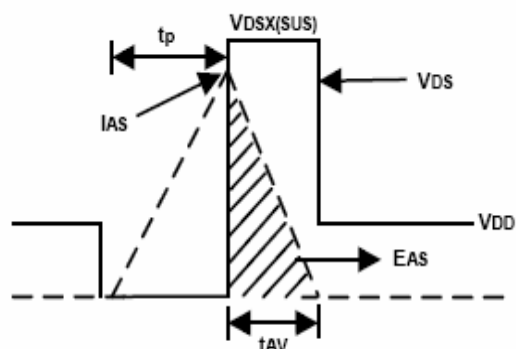
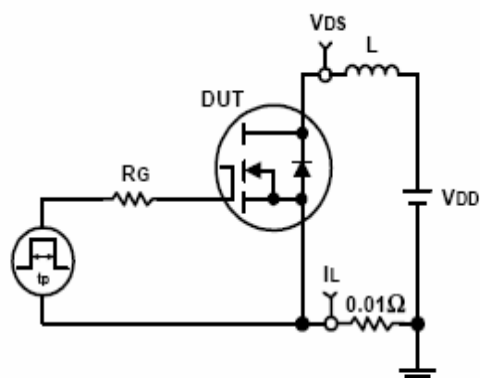
Capacitance



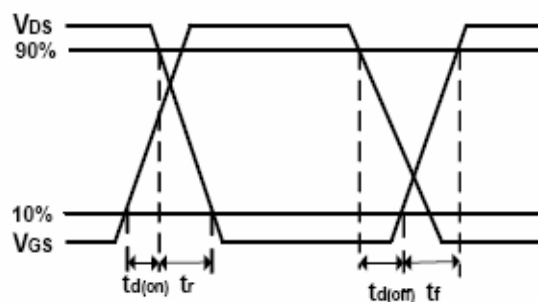
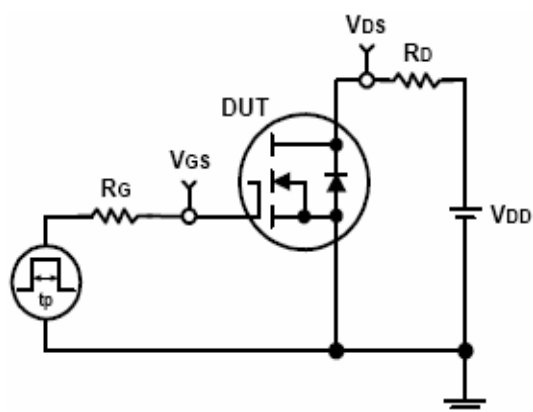
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

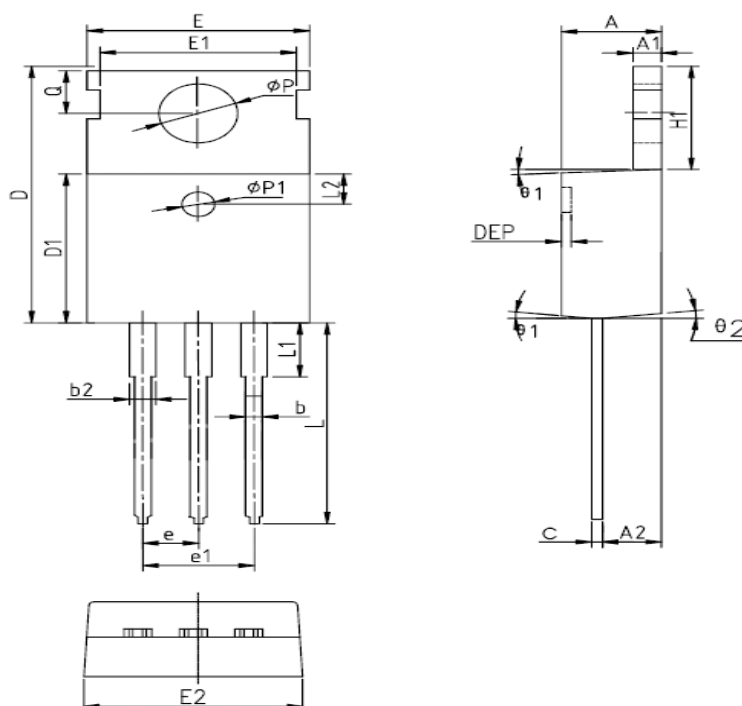


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU6H7R	RU6H7R	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
E	9.96	10.16	10.36	0.392	0.400	0.408	$\phi p3$	-	3.450	-	-	0.136	-
A	4.50	4.70	4.90	0.177	0.185	0.193	$\theta 1$	5°	7°	9°	5°	7°	9°
A1	2.34	2.54	2.74	0.092	0.100	0.108	$\theta 2$	-	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
ϕp	-	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
$\phi p1$	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
$\phi p2$	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

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