

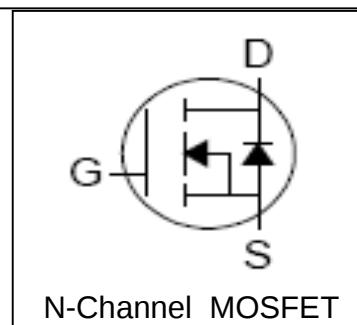
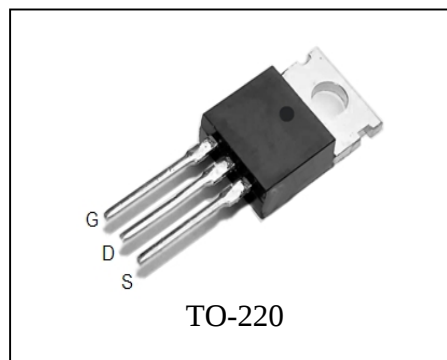
Features

- 800V/7A,
 $R_{DS(ON)} = 1.6\Omega$ (Typ.) @ $V_{GS}=10V$
- Gate charge minimized
- Low C_{rss} (Typ. 15pF)
- 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

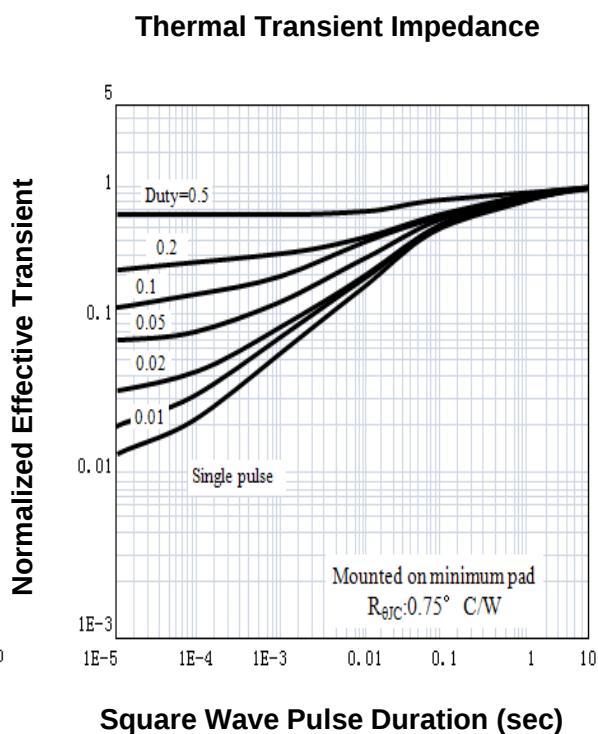
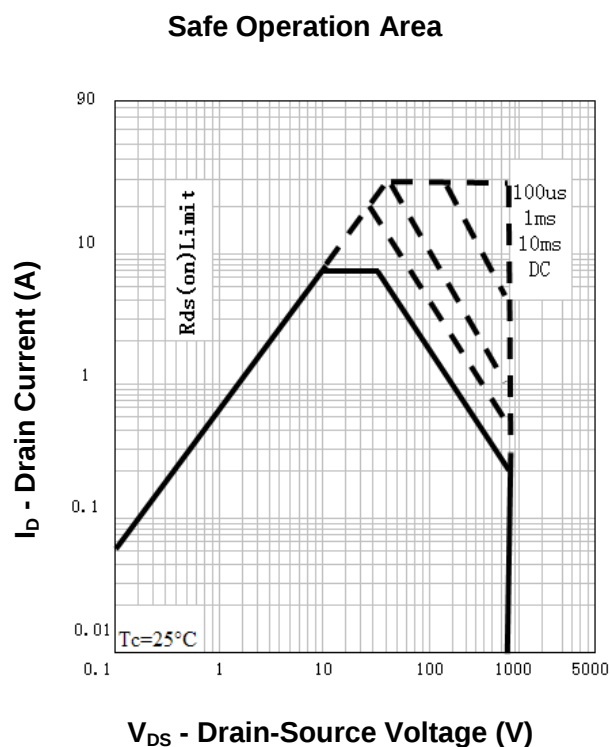
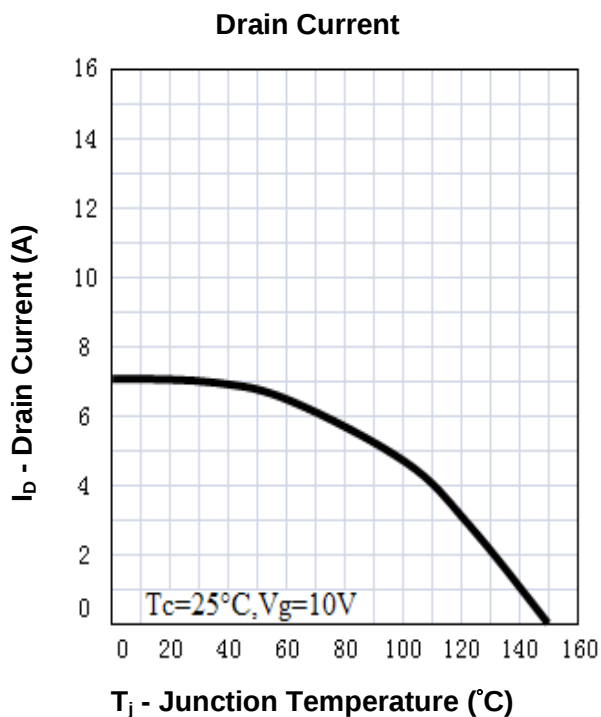
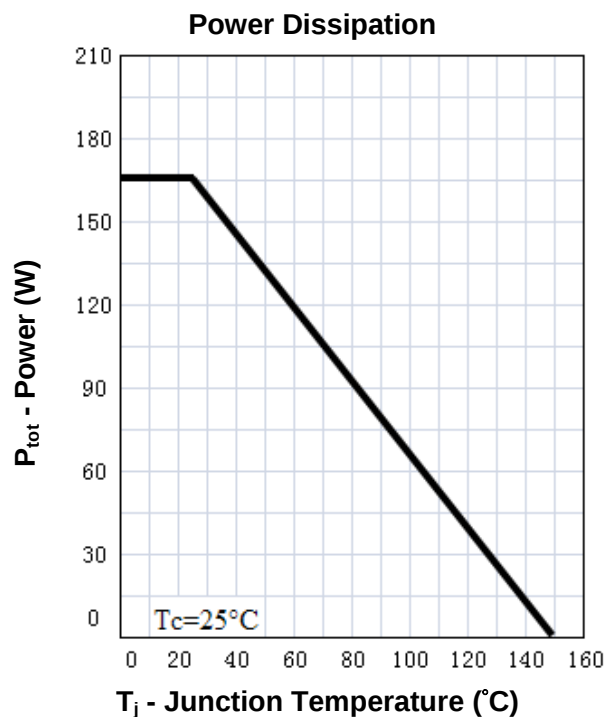
Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		800	V
V _{GSS}	Gate-Source Voltage		±30	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _C =25°C	7	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _C =25°C	28 ^①	A
I _D	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	7 ^①	A
		T _C =100°C	4.5 ^①	
P _D	Maximum Power Dissipation	T _C =25°C	167	W
		T _C =100°C	67	
R _{θJC}	Thermal Resistance-Junction to Case		0.75	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^②	Avalanche Energy, Single Pulsed		45	mJ

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

Symbol	Parameter	Test Condition	RU8H7R			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	800			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =800V, V _{GS} =0V			1	μA
		T _J =85°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2. 5	-	4. 5	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		1.6	1.9	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		780		ns
Q _{rr}	Reverse Recovery Charge			9		μC
Dynamic Characteristics④						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz		10		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} = 400V, Frequency=1.0MHz		1550		pF
C _{oss}	Output Capacitance			145		
C _{rss}	Reverse Transfer Capacitance			15		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =400V, R _L =57Ω, I _{DS} =7A, V _{GEN} =10V, R _G =25Ω		40		ns
t _r	Turn-on Rise Time			120		
t _{d(OFF)}	Turn-off Delay Time			60		
t _f	Turn-off Fall Time			70		
Gate Charge Characteristics④						
Q _g	Total Gate Charge	V _{DS} =640V, V _{GS} =10V, I _{DS} =7A		35		nC
Q _{gs}	Gate-Source Charge			10		
Q _{gd}	Gate-Drain Charge			13		

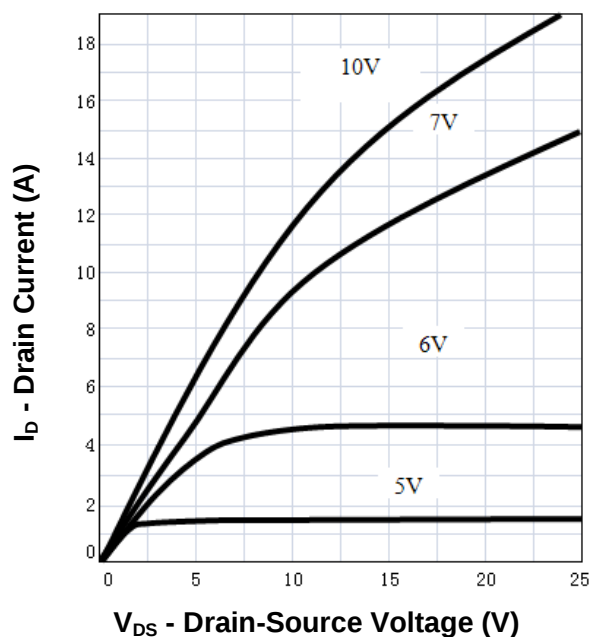
- Notes: ① Current limited by maximum junction temperature.
 ② Limited by T_{Jmax} , $I_{AS}=9.5A$, $V_{DD}=100V$, $R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 ③ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ④ Guaranteed by design, not subject to production testing.

Typical Characteristics

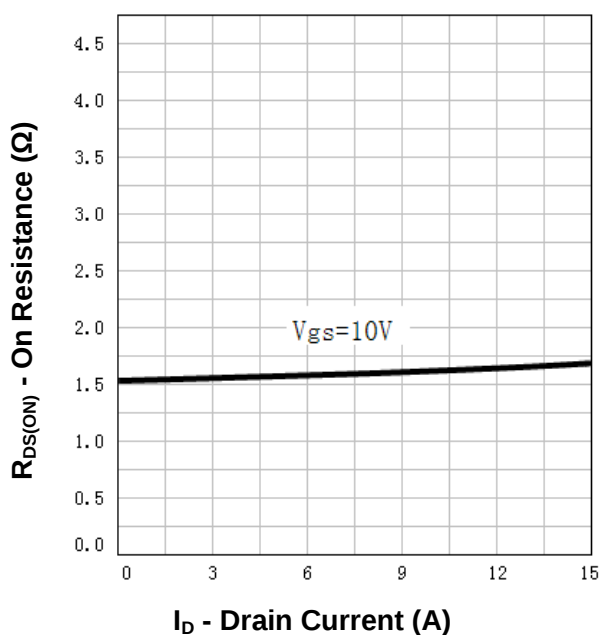


Typical Characteristics

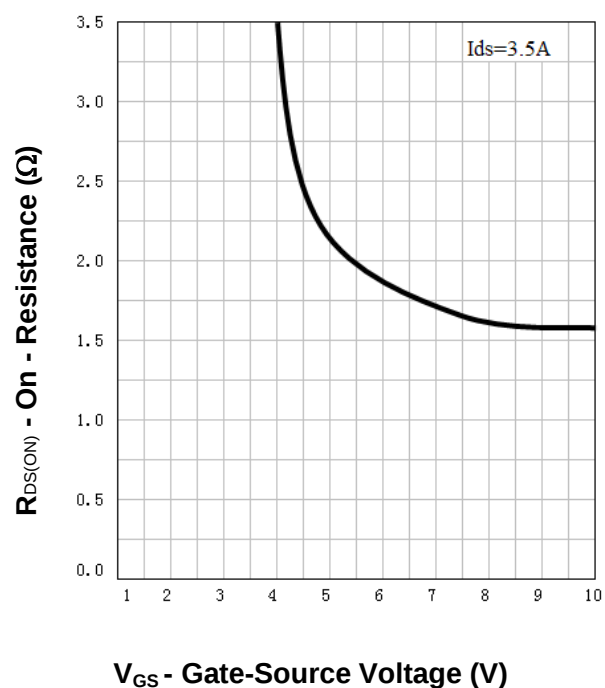
Output Characteristics



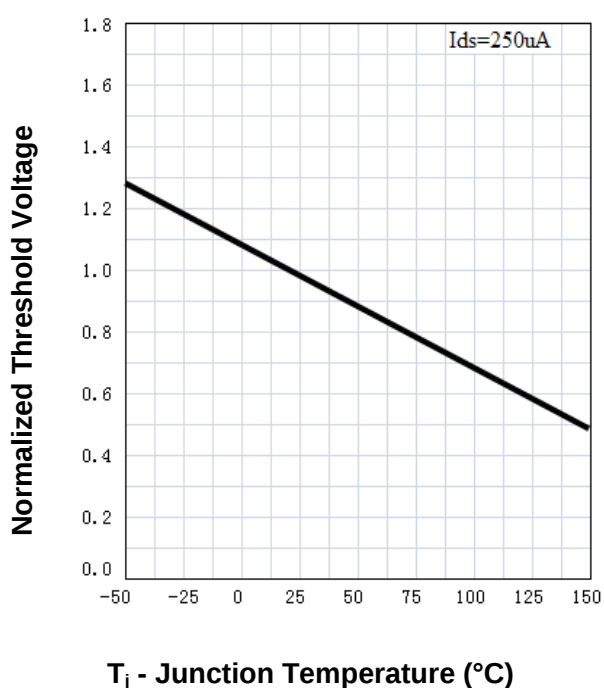
Drain-Source On Resistance



Drain-Source On Resistance

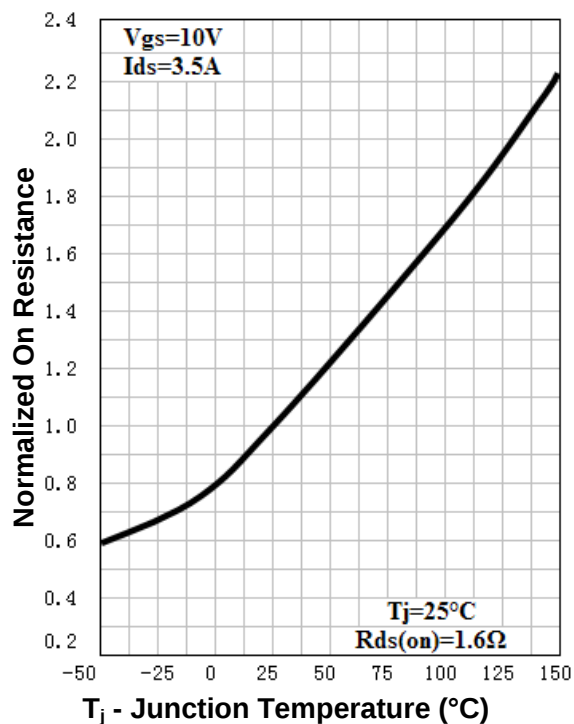


Gate Threshold Voltage

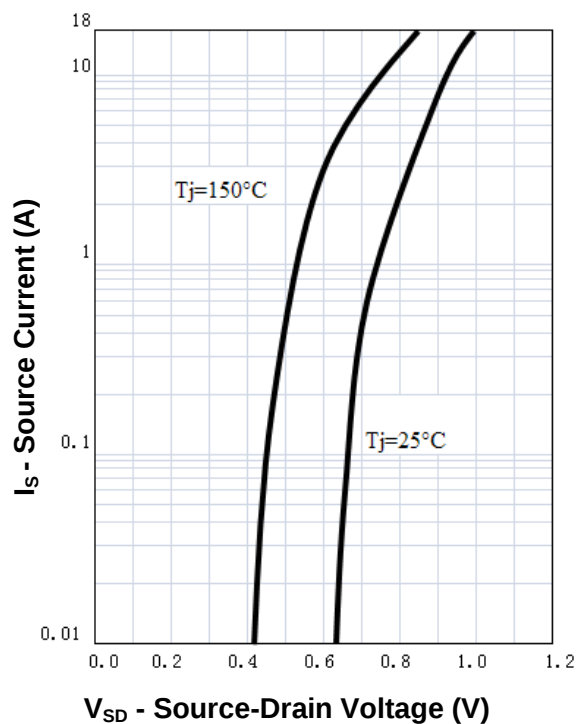


Typical Characteristics

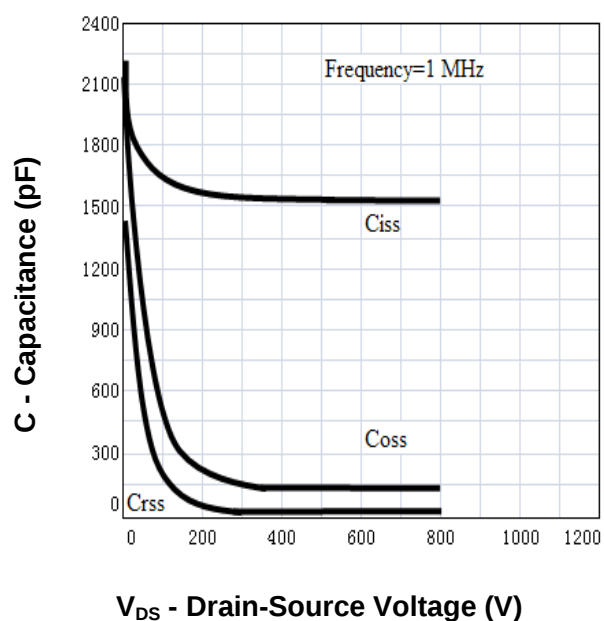
Drain-Source On Resistance



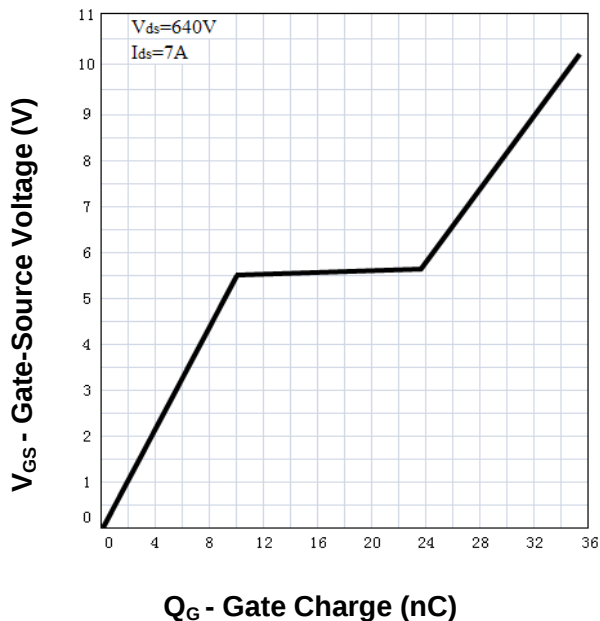
Source-Drain Diode Forward



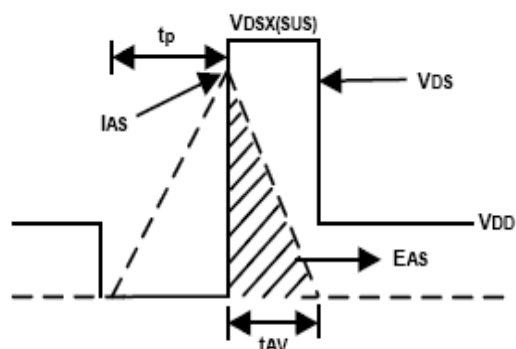
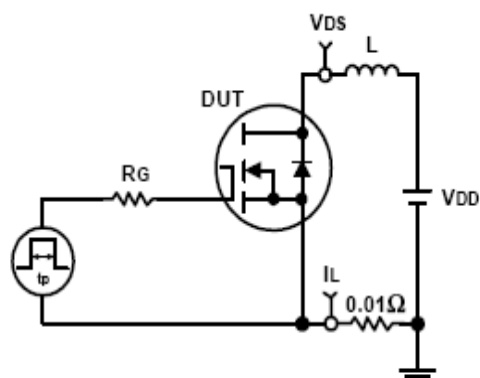
Capacitance



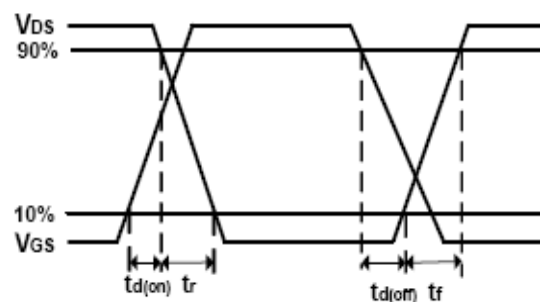
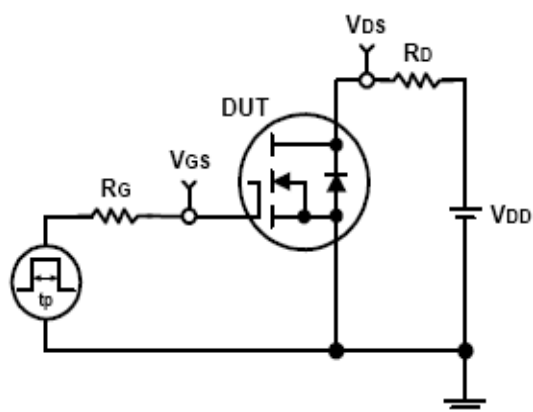
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

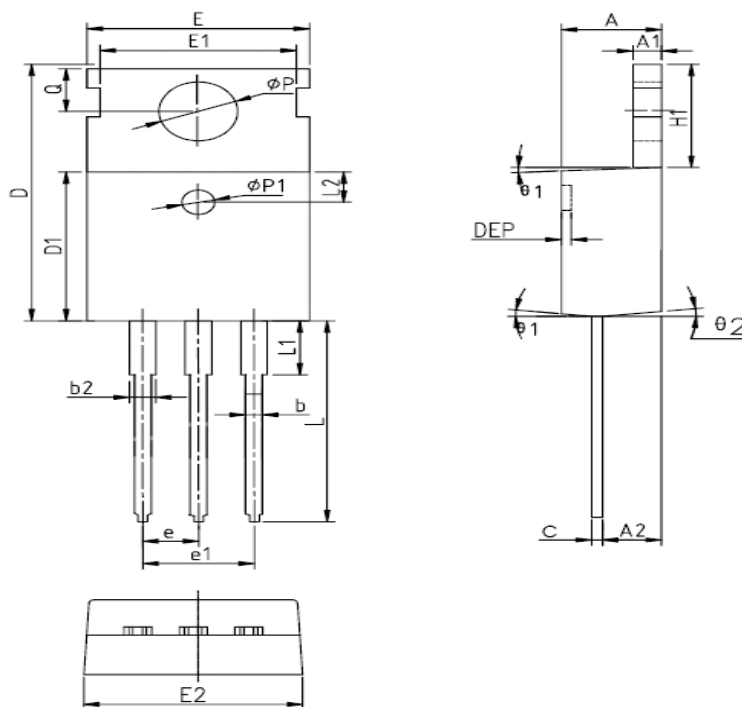


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU8H7R	RU8H7R	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

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