DESCRIPTION

The AM60R150 is available in TO-220, TO-220F, TO-247 and TO-3PN packages.

BVDSS	RDSON	ID
650V	0.126Ω	25.3A

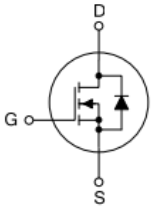
Application:

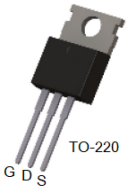
High frequency switching mode power supply

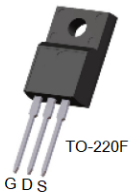
FEATURE

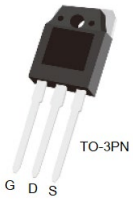
- Fast Switching
- 100% avalanche tested
- Improved dv/dt capability

PIN DESCRIPTION









Pin#	Symbol	Function
1	G	Gate
2	D	Drain
3	S	Source

ORDERING INFORMATION

Package Type	Part Number	
TO-220 SPQ: 50pcs/Tube	T3	AM60R150T3U
		AM60R150T3VU
TO-220F SPQ: 50pcs/Tube	T3F	AM60R150T3FU
		AM60R150T3FVU
TO-247 SPQ: 30pcs/Tube	TL3F	AM60R150TL3FU
		AM60R150TL3FVU
TO-3PN SPQ: 30pcs/Tube	TX	AM60R150TXU
		AM60R150TXVU
Note	U: Tube V: Halogen free Package	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_C = 25°C, unless otherwise specified.

V_{DSS}, Drain-to-Source Voltage		600V
I_D, Continuous Drain Current		25.3A
I_D, Continuous Drain Current T_C = 100 °C		16A
I_{DM}, Pulsed Drain Current (1)		75.9A
V_{GS}, Gate-to-Source Voltage		±30V
E_{AS}, Single Pulse Avalanche Energy (2)		600mJ
dv/dt, Peak Diode Recovery dv/dt (3)		15V/ns
P_D, Power Dissipation	TO-220, TO-3PN	220W
	TO-220F	42W
P_D, Derating Factor above 25°C	TO-220, TO-3PN	1.75W/℃
	TO-220F	0.33W/℃
T_J, Operating Junction Temperature Range		150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃
T_L, Maximum Temperature for Soldering		300℃
$R_{\theta JA}$, Junction-to-Ambient	T TO-220, TO-3PN	62.5℃/W
	TO-220F	80℃/W
$R_{\theta JC}$, Junction-to-Case	TO-220, TO-3PN	0.57℃/W
	TO-220F	3℃/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) Pulse width limited by maximum junction temperature

(2) L=20mH, V_{Ds}=50V, Start T_J=25℃

(3) I_{SD} =11A,di/dt ≤100A/us, V_{DD}≤B_{VDS}, Start T_J=25℃

ELECTRICAL CHARACTERISTICS

T_C = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
OFF Characteristics						
Drain to Source Breakdown Voltage	V_{DSS}	V_{GS}=0V, I_D=250μA	600	-	-	V
BV_{DSS} Temperature Coefficient	ΔBV_{DSS} / ΔT_J	I_D=250μA Reference 25℃	-	0.63	-	V/℃
Drain to Source Leakage Current	I_{DSS}	V_{DS}=600V, V_{GS}=0V, T_J=25℃	-	-	1	μA
		V_{DS}=480V, V_{GS}=0V, T_J=125℃	-	-	100	
Gate to Source Forward Leakage	$I_{GSS(F)}$	V_{GS}=+30V	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	V_{GS}=-30V	-	-	-100	nA
ON Characteristics						
Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=9A (4)	-	0.126	0.15	Ω
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D=250μA(4)	2.5	-	4.5	V
Dynamic Characteristics						
Gate resistance	R_g	f=1MHz	-	3.2	-	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	1860	-	pF
Output Capacitance	C_{oss}		-	1060	-	
Reverse Transfer Capacitance	C_{rss}		-	56	-	
Switching Characteristics						
Turn-on Delay Time	$t_{d\ (ON)}$	I_D=8.5A, V_{DD}=300V, V_{GS}=10V, R_G=5Ω	-	100.4	-	ns
Rise Time	t_r		-	61	-	
Turn-Off Delay Time	$t_{d\ (OFF)}$		-	220.6	-	
Fall Time	t_f		-	54.8	-	
Total Gate Charge	Q_g	I_D=11A, V_{DD}=400V, V_{GS}=10V	-	43	-	nC
Gate to Source Charge	Q_{gs}		-	10	-	
Gate to Drain (“Miller”) Charge	Q_{gd}		-	16	-	
Source-Drain Diode Characteristics						
Continuous Source Current (Body Diode)	I_S	T_c=25℃	-	-	25.3	A
Maximum Pulsed Current (Body Diode)	I_{SM}		-	-	75.9	A
Diode Forward Voltage	V_{SD}	I_S=11A , V_{GS}=0V *	-	-	1.2	V
Reverse Recovery Time	T_{rr}	I_S=23A, Tj=25℃ dIF/dt =100A/μs V_{GS}=0V	-	267.6	-	ns
Reverse Recovery Charge	Q_{rr}		-	4069	-	nC
Reverse Recovery Current	I_{rrm}		-	26.8	-	A

* Pulse width tp≤300μs, δ≤2%

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Safe Operating Area (TO-220)

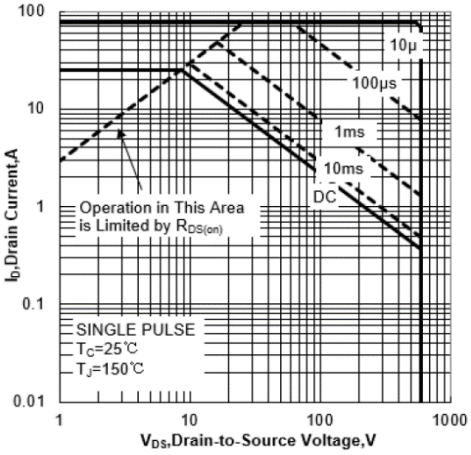


Fig 2. Safe Operating Area (TO-220F)

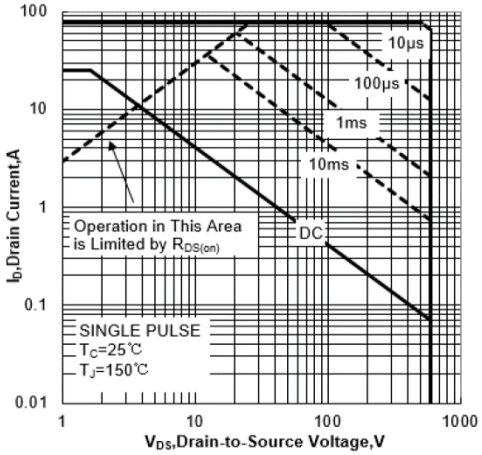


Fig3. Power Dissipation (TO-220)

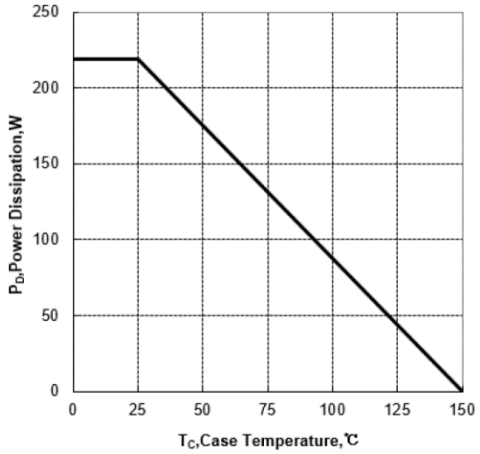


Fig4. Power Dissipation (TO-220F)

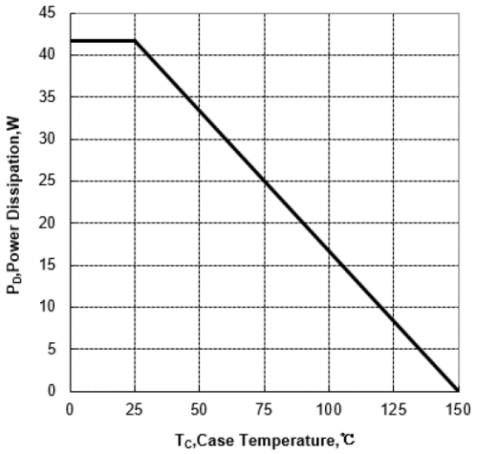


Fig5. Max Thermal Impedance (TO-220)

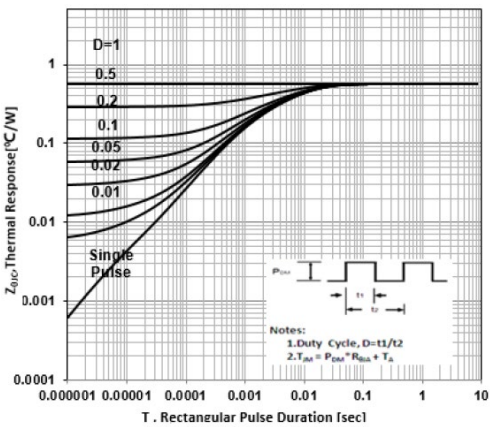


Fig6. Max Thermal Impedance (TO-220F)

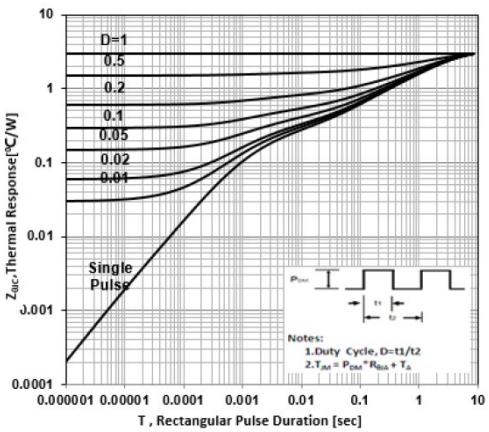


Fig7. Typical Output Characteristics

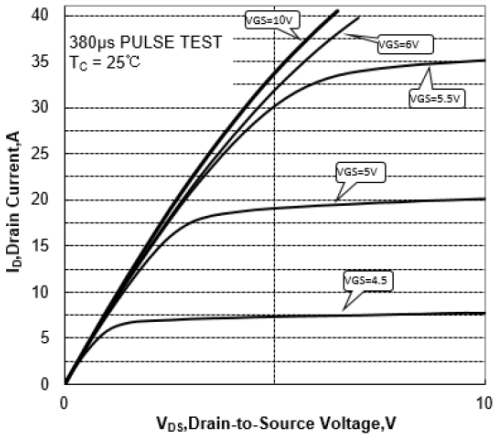


Fig8. Typical Transfer Characteristics

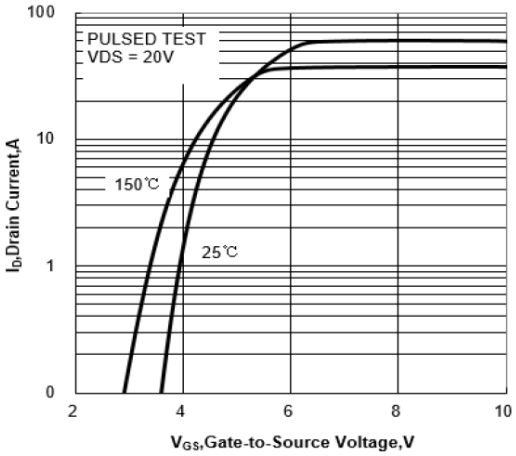


Fig9. Typical Drain to Source ON Resistance vs. Drain Current

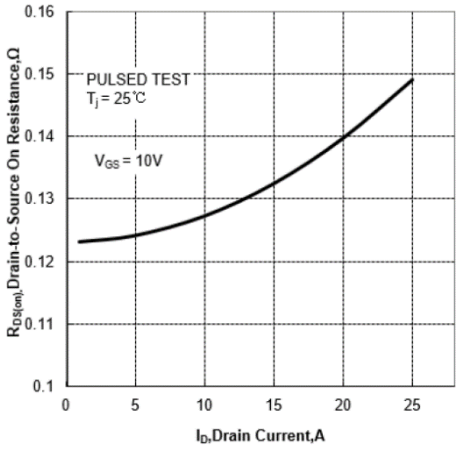


Fig10. Typical Drain to Source on Resistance vs. Junction Temperature

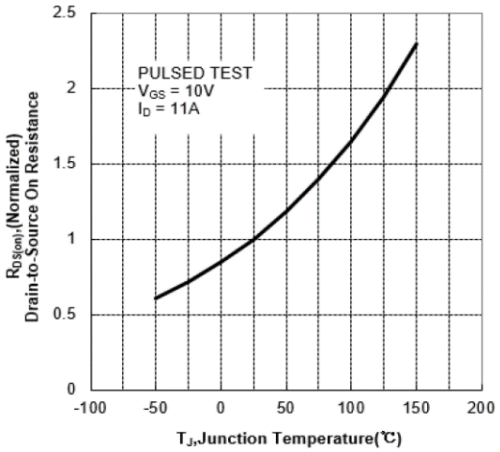


Fig11. Typical Threshold Voltage vs. Junction Temperature

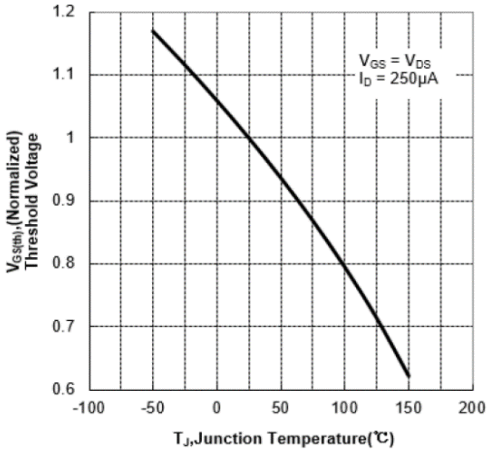


Fig12. Typical Breakdown Voltage vs. Junction Temperature

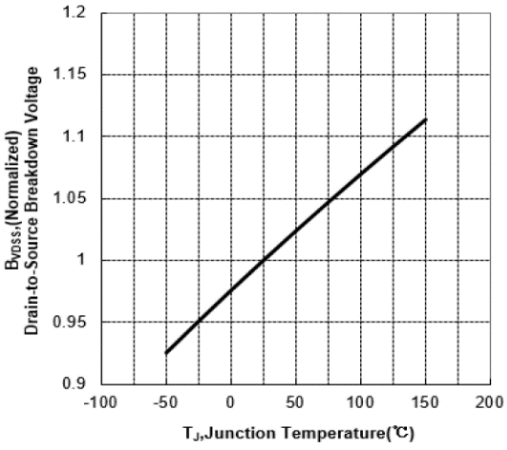


Fig 13. Typical Capacitance vs. Drain to Source Voltage

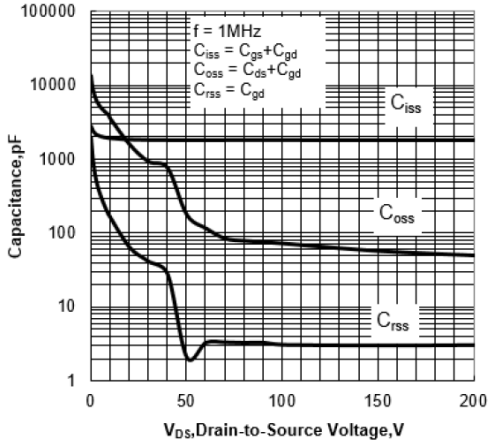


Fig 14. Typical Gate Charge vs. Gate to Source Voltage

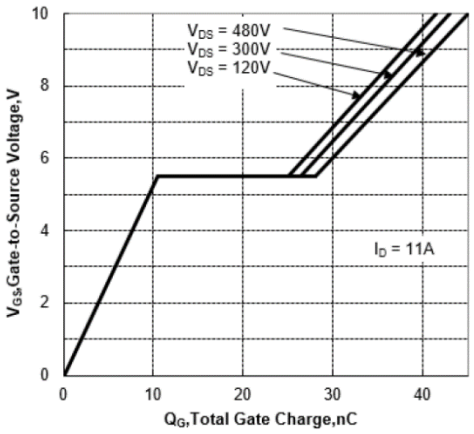


Fig15. Gate Charge Test Circuit

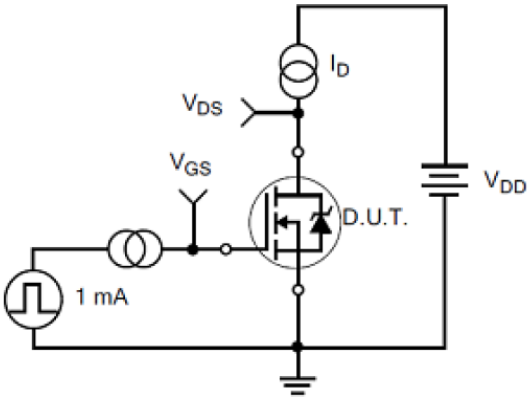


Fig16. Gate Charge Waveforms

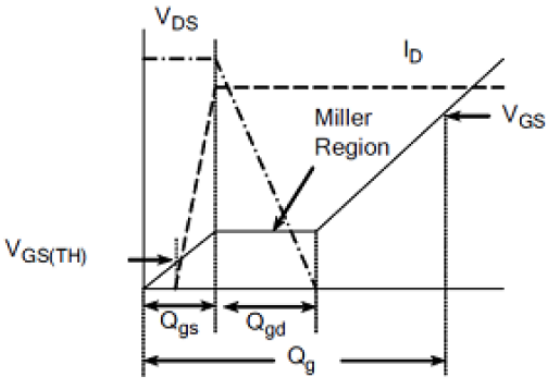


Fig17. Resistive Switching Test Circuit

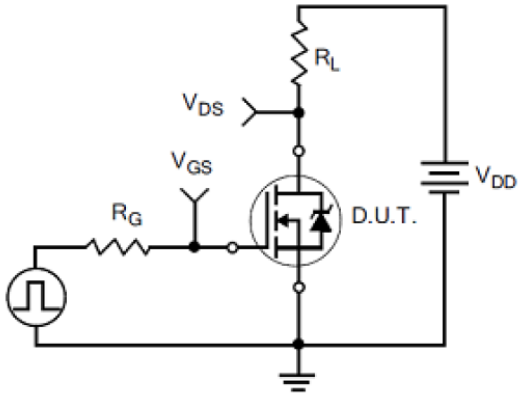


Fig18. Resistive Switching Waveforms

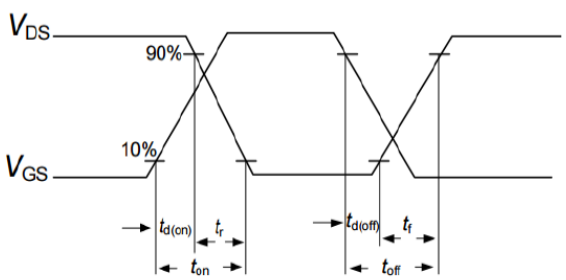


Fig 19. Diode Reverse Recovery Test Circuit

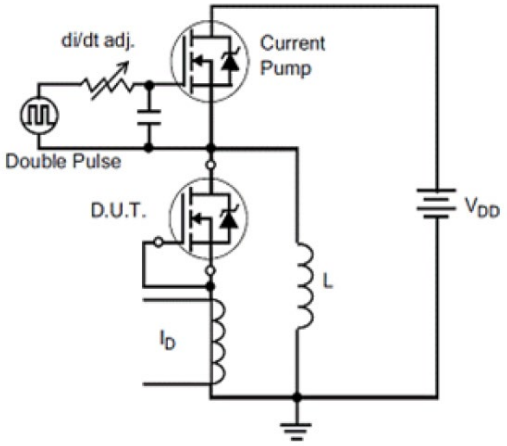


Fig 20. Diode Reverse Recovery Waveform

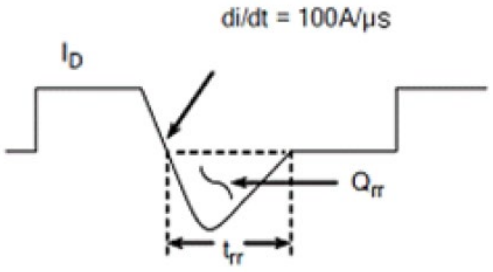


Fig 21. Unclamped Inductive Switching Test Circuit

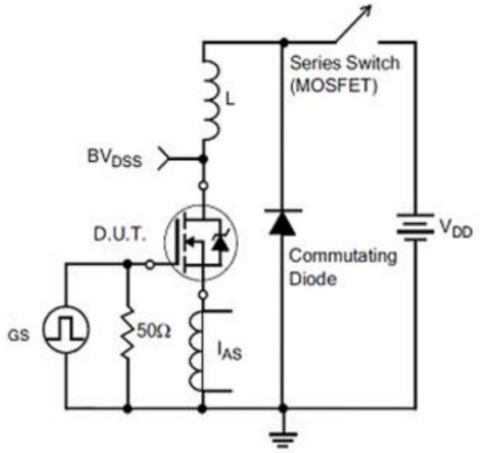
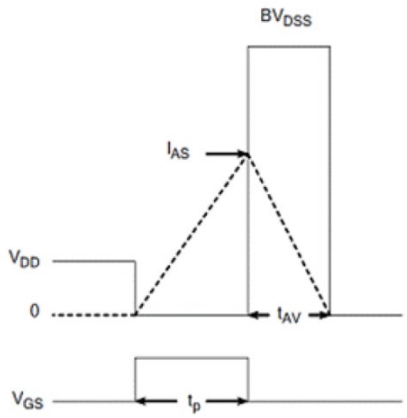
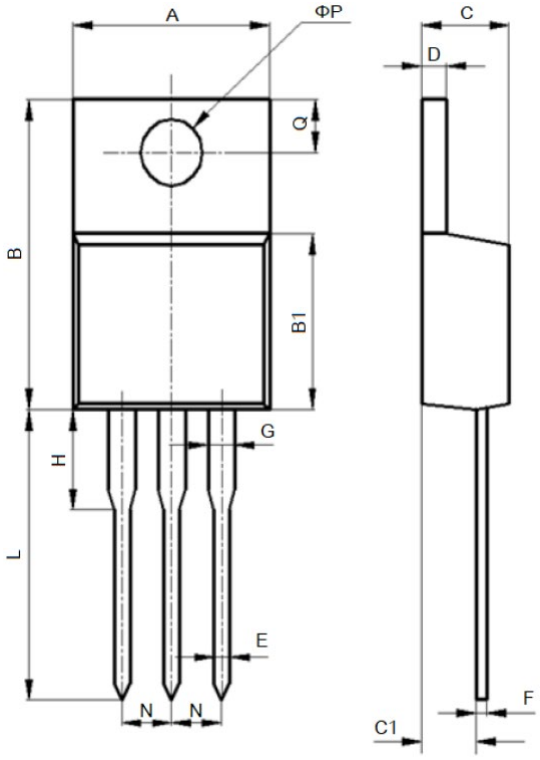


Fig 22. Unclamped Inductive Switching Waveform



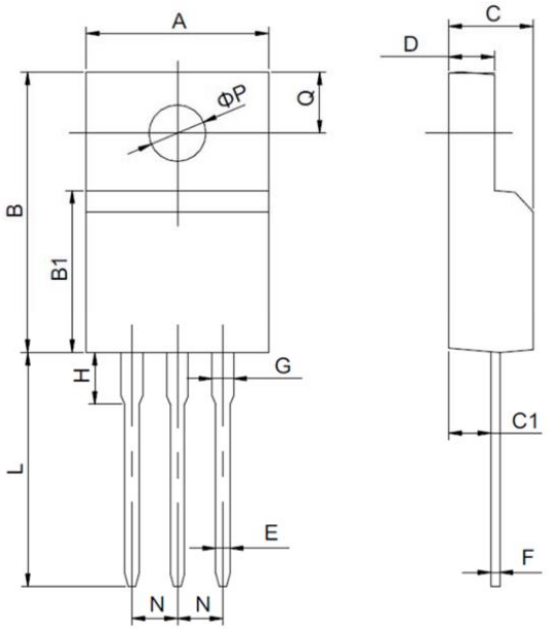
PACKAGE INFORMATION

Dimension in TO-220 (Unit: mm)



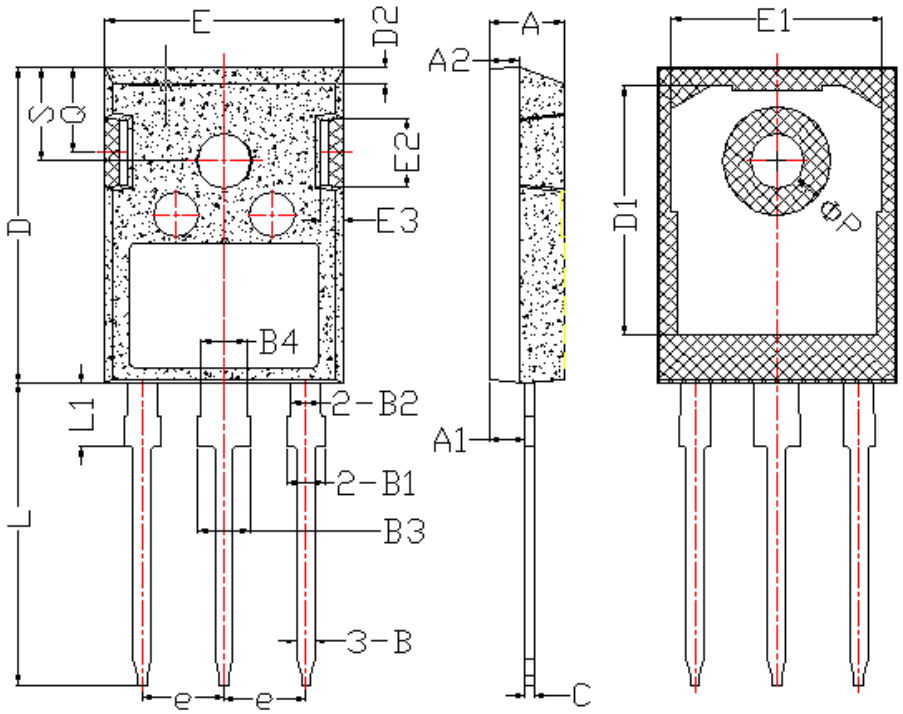
Symbol	Min.	Max.
A	9.600	10.600
B	15.000	16.000
B1	8.900	9.500
C	4.300	4.800
C1	2.300	3.100
D	1.200	1.400
E	0.700	0.900
F	0.300	0.600
G	1.170	1.370
H	2.700	3.800
L	12.600	14.800
N	2.340	2.740
Q	2.400	3.000
ΦP	3.500	3.900

Dimension in TO-220F (Unit: mm)



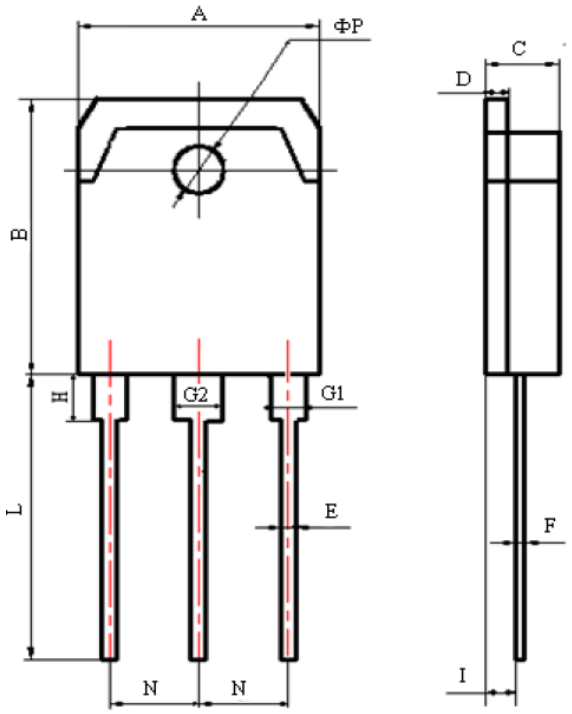
Symbol	Min.	Max.
A	9.600	10.400
B	15.400	16.200
B1	8.900	9.500
C	4.300	4.900
C1	2.100	3.000
D	2.400	3.000
E	0.600	1.000
F	0.300	0.600
G	1.120	1.420
H	1.600	3.800
L	12.000	14.000
N	2.340	2.740
Q	3.150	3.550
ΦP	2.900	3.300

Dimension in TO-247 (Unit: mm)



Symbol	Min.	Max.
A	4.600	5.200
A1	2.200	2.600
B	0.900	1.400
B1	1.750	2.350
B2	1.750	2.150
B3	2.800	3.350
B4	2.800	3.150
C	0.500	0.700
D	20.600	21.300
D1	16.000	18.000
E	15.500	16.100
E1	13.000	14.700
E2	3.800	5.300
E3	0.800	2.600
e	5.200	5.700
L	19.000	20.500
L1	3.900	4.600
ΦP	2.500	3.700
Q	5.200	6.000
S	5.800	6.600

Dimension in TO-3PN (Unit: mm)



Symbol	Min.	Max.
A	15.000	16.000
B	19.200	20.600
C	4.600	5.000
D	1.400	1.600
E	0.900	1.100
F	0.500	0.700
G1	2.000	2.200
G2	3.000	3.200
H	3.000	3.700
I	1.200	2.90
L	19.000	21.000
N	5.250	5.650
ΦP	3.100	3.300

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