Features

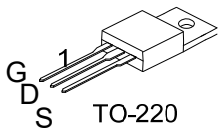
◇ High Speed Power Switching, Logic Level
◇ Enhanced Body diode dv/dt capability
◇ Enhanced Avalanche Ruggedness
◇ 100% UIS Tested, 100% Rg Tested
◇ Lead Free, Halogen Free

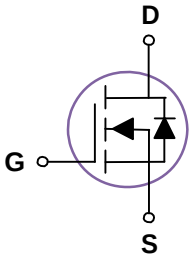
Application

◇ Synchronous Rectification in SMPS
◇ Hard Switching and High Speed Circuit
◇ DC/DC in Telecoms and Inductrial

Product Summary

V_{DS}	100	V
$R_{DS(on),typ}$ V_{GS}=10V	9	mΩ
I_D	75	A





Absolute Maximum Ratings at T_j=25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C=25℃	75	A
		T_C=100℃	38	
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	+20/-12	V
Pulsed Drain Current	I_{DM}	-	80	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C=25℃	80	mJ
Power Dissipation	P_D	T_C=25℃	3.1	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to150	℃

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Lead	$R_{\theta JL}$	23	℃/W
Thermal Resistance Junction-Ambient (t≤10s)	$R_{\theta JA}$	40	℃/W
Thermal Resistance Junction-Ambient (steady state)		75	℃/W

Electrical Characteristics at T_j=25℃ (unless otherwise specified)

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1	1.8	2.5	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=95V, T_j=25℃	-	-	1	μA
		V_{GS}=0V, V_{DS}=95V, T_j=125℃	-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=14A	-	9	12	mΩ
		V_{GS}=4.5V, I_D=10A	-	12	15.5	
Transconductance	g_{fs}	V_{DS}=5V, I_D=14A	-	70	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.5	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	3350	-	pF
Output Capacitance	C_{oss}		-	270	-	
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Total Gate Charge	Q_g(10V)	V_{DD}=50V, I_D=14A, V_{GS}=10V	-	49	-	nC
Total Gate Charge	Q_g(4.5V)		-	21	-	
Gate to Source Charge	Q_{gs}		-	8	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	7	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=50V, I_D=14A, V_{GS}=10V, R_G=10Ω,	-	10	-	ns
Rise time	t_r		-	5	-	
Turn off Delay Time	$t_{d(off)}$		-	32	-	
Fall Time	t_f		-	6	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=14A	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	V_R=50V, I_F=14A, dI_F/dt=500A/μs	-	47	-	ns
Reverse Recovery Charge	Q_{rr}		-	226	-	nC

Fig 1. Typical Output Characteristics

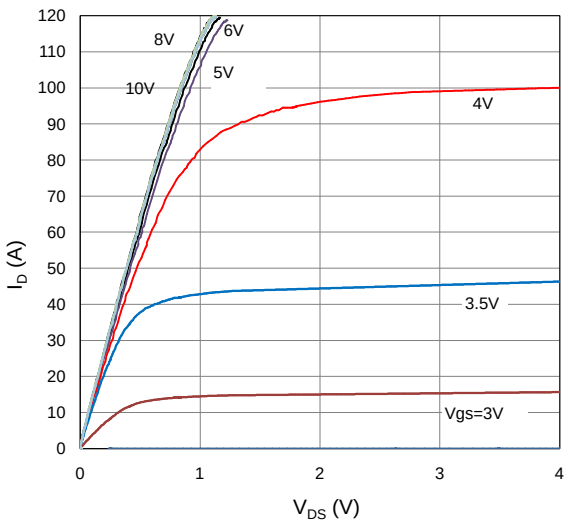


Figure 2. On-Resistance vs. Gate-Source Voltage

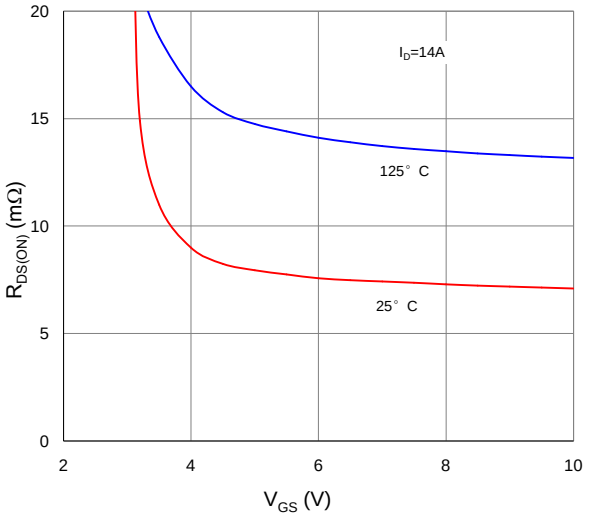


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

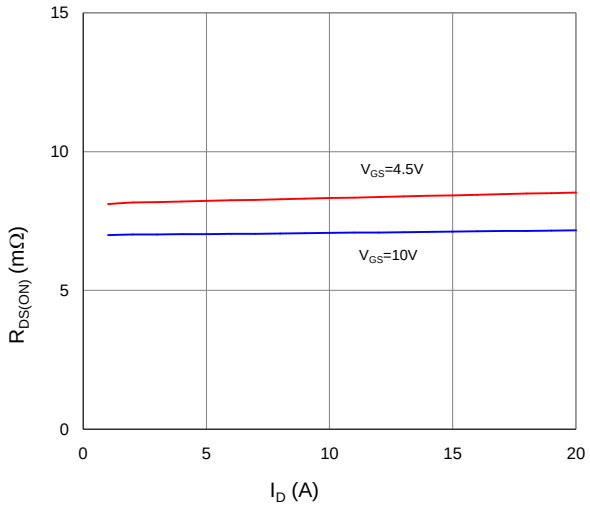


Figure 4. Normalized On-Resistance vs. Junction Temperature

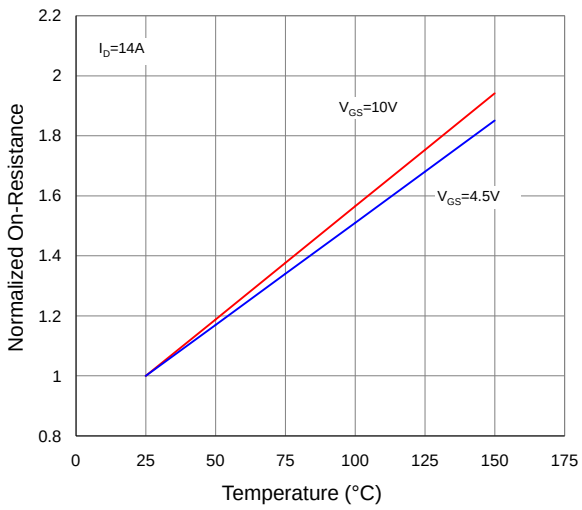


Figure 5. Typical Transfer Characteristics

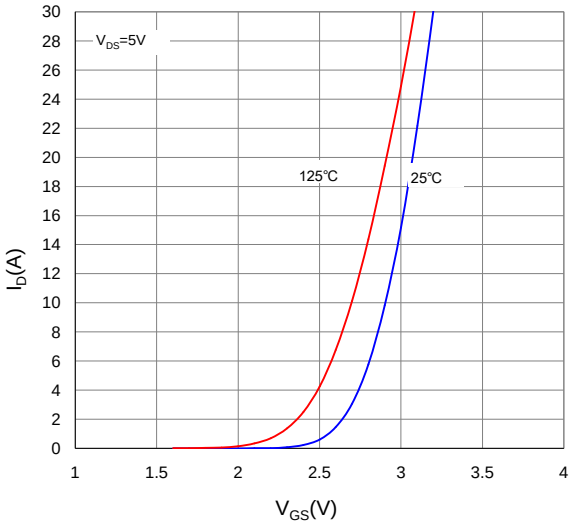


Figure 6. Typical Source-Drain Diode Forward Voltage

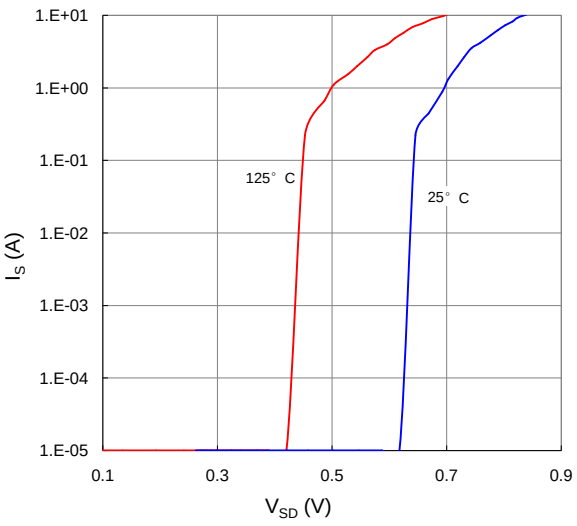


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

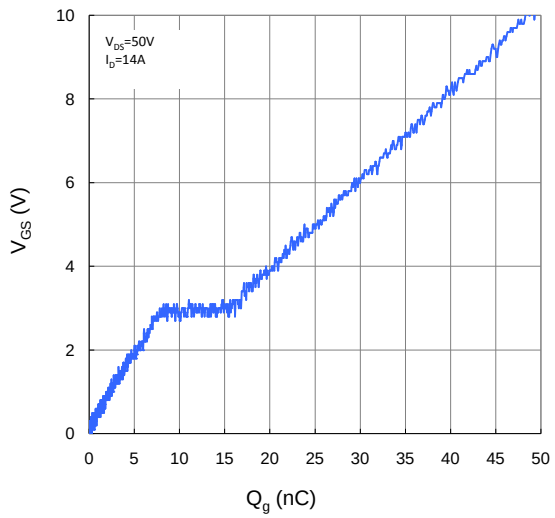


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

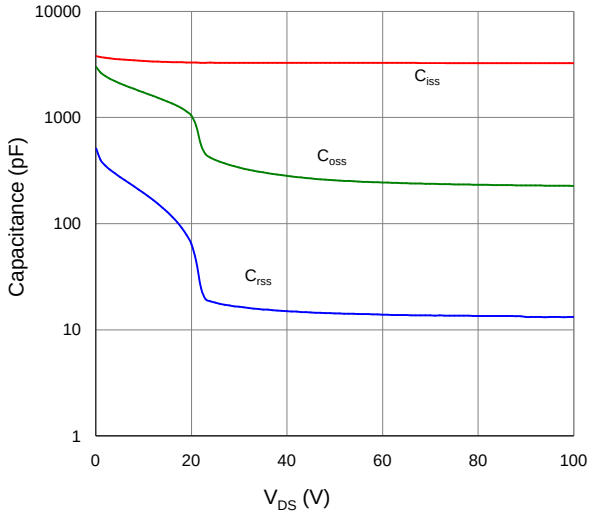


Figure 9. Maximum Safe Operating Area

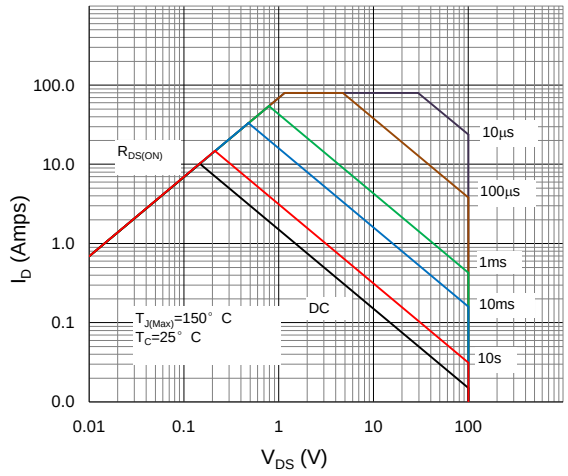


Figure 10. Maximun Drain Current vs. Case Temperature

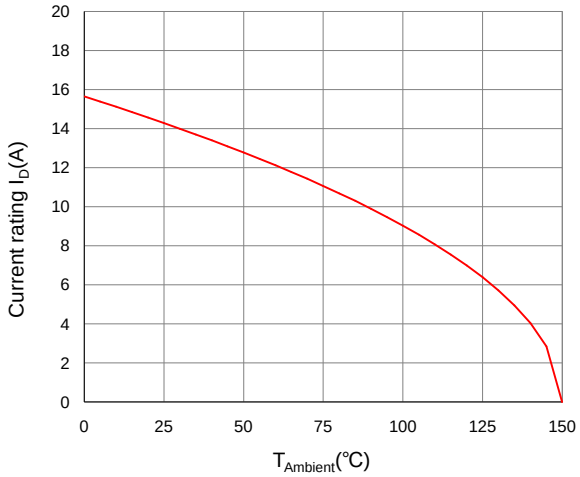
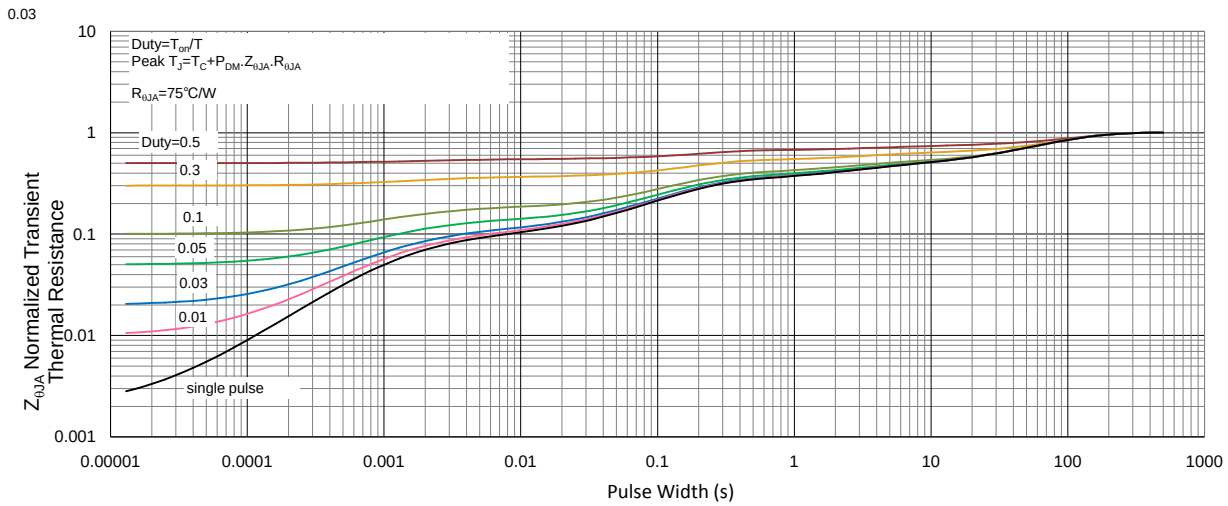
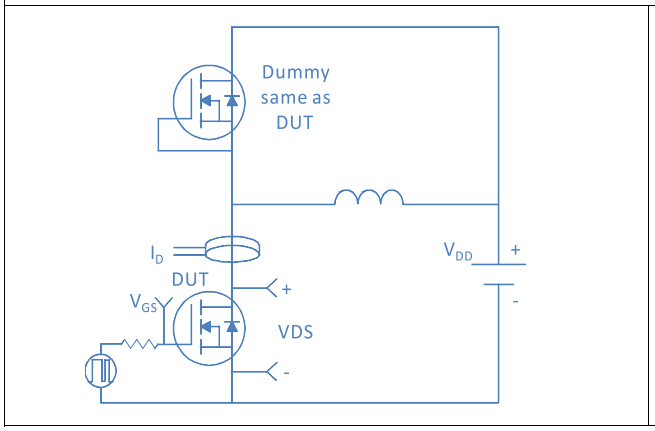
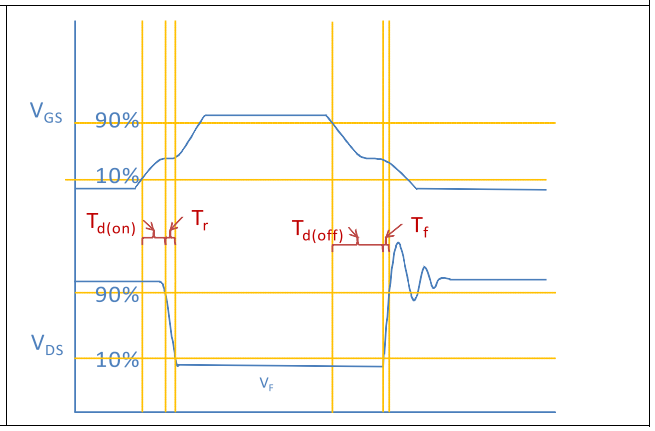


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

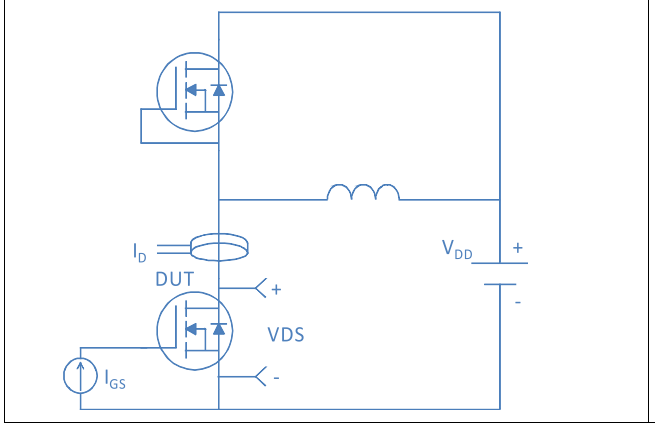


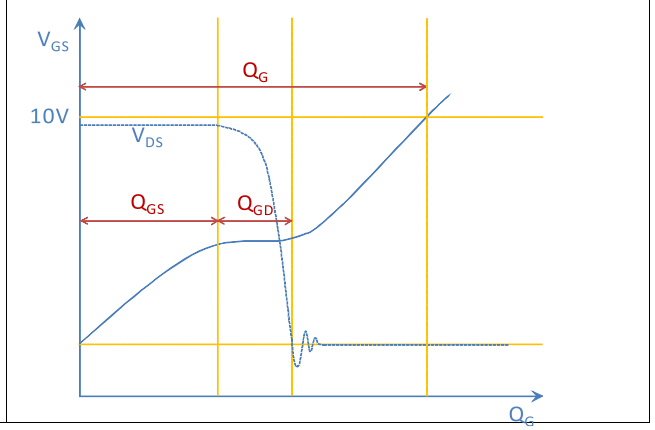
Inductive switching Test



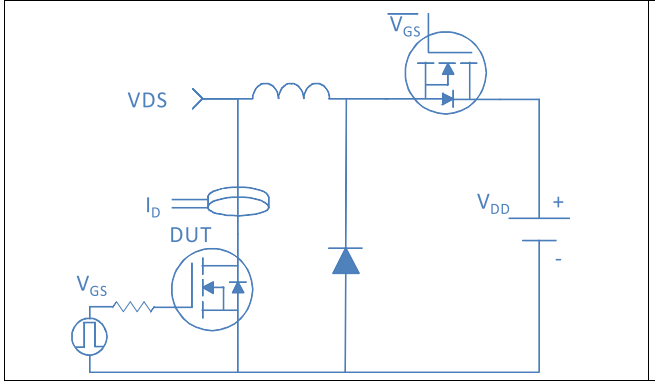


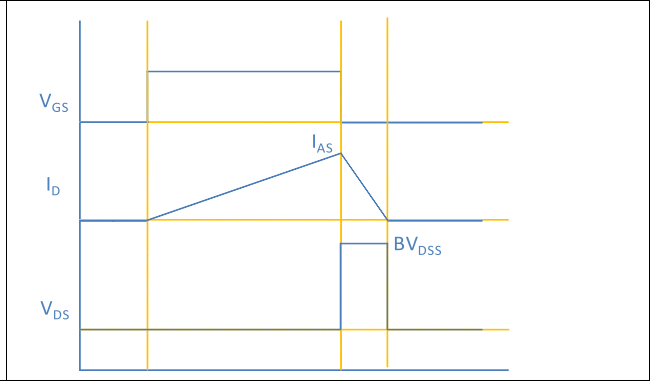
Gate Charge Test



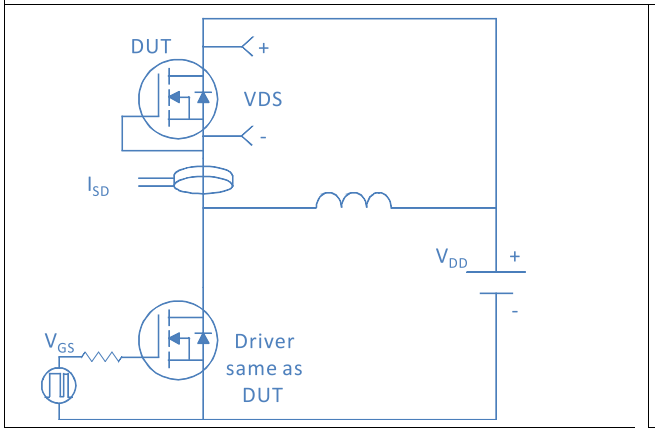


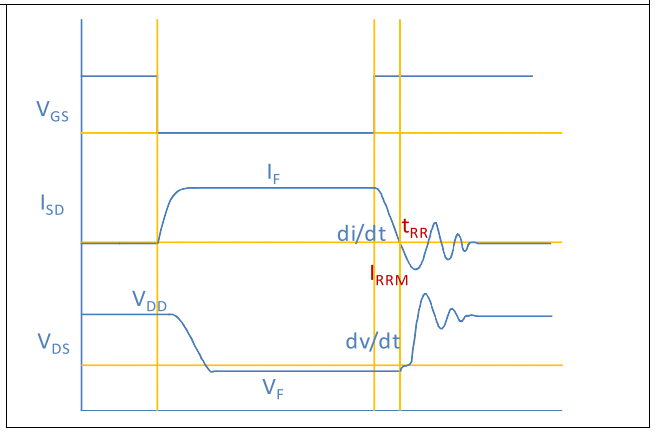
Uclamped Inductive Switching (UIS) Test





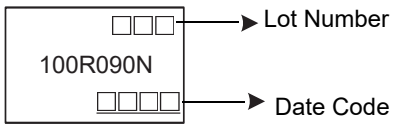
Diode Recovery Test

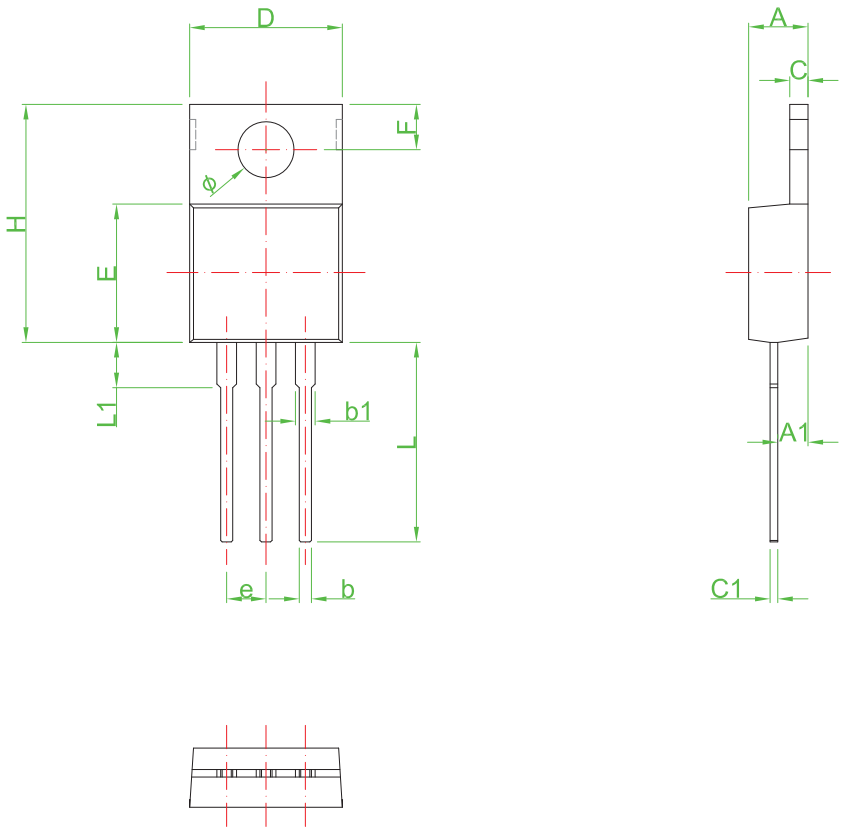




Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM100R090NP-T	100R090N	TO-220	TUBE	50

PACKAGE	MARKING
TO-220	



Symbol	Dimensions In Millmeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.00	4.80	0.157	0.189
A1	1.80	2.80	0.071	0.110
b	0.60	1.00	0.024	0.039
b1	1.14	1.78	0.045	0.070
C	1.00	1.40	0.039	0.055
C1	0.36	0.61	0.014	0.024
D	9.90	10.50	0.390	0.413
E	8.38	9.20	0.330	0.362
e	2.54 TYP		0.100 TYP	
F	2.54	3.20	0.100	0.126
ø	3.50	3.90	0.138	0.154
H	14.48	15.87	0.570	0.625
L	13.00	13.80	0.512	0.543
L1	---	4.10	---	0.161

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