



DESCRIPTION

The AM06N90 is available in TO-220F package.

APPLICATION

- Adaptor
- Charger
- SMPS Standby Power

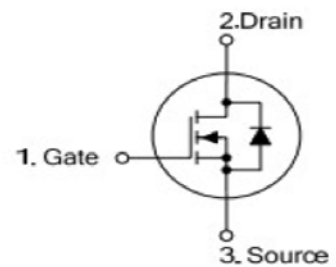
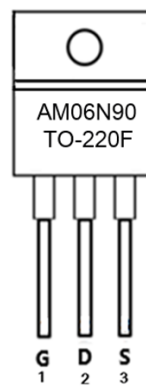
ORDERING INFORMATION

Package Type	Part Number	
TO-220F SPQ:500pcs/Tube	T3F	AM06N90T3FU
		AM06N90T3FVU
Note	V: Halogen free Package U: Tube Package	
AiT provides all RoHS products		

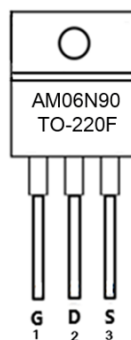
FEATURES

- $R_{DS(ON),typ.} = 1.4 \Omega @ V_{GS} = 10V$
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

N CHANNEL MOSFET



PIN DESCRIPTION



TO-220F, T3F
Top View

Pin#	Symbol	Function
T0-220F		
1	G	Gate
2	D	Drain
3	S	Source



ABSOLUTE MAXIMUM RATINGS

T_C = 25°C, unless otherwise specified

V _{DSS} , Drain-Source Voltage		900V
V _{GSS} Gate-to-Source Voltage		±30V
I _D , Continuous Drain Current		6.0A
I _{DM} Pulsed Drain Current	@V _{GS} =10V	24A
E _{AS} Single Pulse Avalanche Energy		700mJ
P _D Power Dissipation		45W
P _D Derating Factor above 25°C		0.29W/°C
R _{θJC} Thermal Resistance, Junction-to-Case		2.78°C/W
R _{θJA} Thermal Resistance, Junction-to-Ambient		100°C/W
T _J , T _{stg} Operating Junction and Storage Temperature Range		-55 to 150°C
T _L Maximum Temperature for Soldering		300°C

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

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.



ELECTRICAL CHARACTERISTICS

T_c = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
OFF Characteristics						
Drain to Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	900	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =900V, V _{GS} = 0V,	-	-	1	μA
		V _{DS} =720V, V _{GS} = 0V, T _j = 125°C	-	-	100	μA
Gate to Source Forward Leakage	I _{GSS}	V _{GS} =+30V V _{DS} =0V	-	-	100	μA
		V _{GS} =-30V V _{DS} =0V	-	-	-100	
ON Characteristics						
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =3A	-	1.4	1.9	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	3.0	-	5.0	V
Forward Transconductance	g _{fs}	V _{DS} =15V, I _D =3A	-	8.0	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} = 0V V _{DS} = 25V f = 1.0MHz	--	1460	--	pF
Reverse Transfer Capacitance	C _{rss}		--	23	--	pF
Output Capacitance	C _{oss}		--	130	--	pF
Total Gate Charge	Q _g	V _{DD} =450V I _D =6A V _{GS} =0 to 10V		37		ns
Gate-to-Source Charge	Q _{gs}			8.0		ns
Gate-to-Drain (Miller) Charge	Q _{gd}			14		ns



T_c = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Resistive Switching Characteristics*						
Turn-on Delay Time	t _{d(ON)}	V _{DD} =450V I _D =6A V _{GS} = 10V R _G =9.1Ω	--	22	--	ns
Rise Time	t _{rise}		--	45	--	
Turn-Off Delay Time	t _{d(OFF)}		--	33	--	
Fall Time	t _{fall}		--	37	--	
Source-Drain Body Diode Characteristics						
Continuous Source Current	I _{SD}	Integral pn-diode in MOSFET	-	-	6	A
Pulsed Source Current	I _{SM}		-	-	24	A
Diode Forward Voltage	V _{SD}	I _S =64A, V _{GS} =0V	-	-	1.5	V
Reverse Recovery Time	T _{rr}	V _{GS} =0V I _F =I _S di/dt=100A/us	-	390	-	ns
Reverse Recovery Charge	Q _{rr}		-	1.4	-	nC

*Essentially independent of operating temperature



TYPICAL PERFORMANCE CHARACTERISTICS

Fig1 Maximum Safe Operating Area

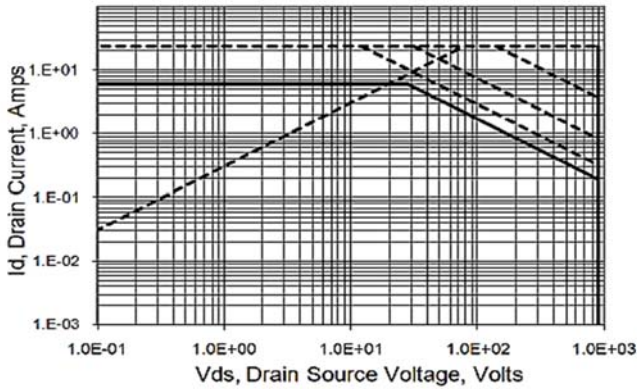


Fig2 Maximum Power Dissipation vs Case Temperature

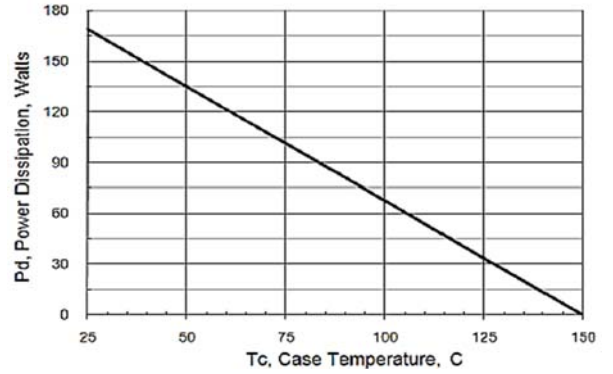


Fig3 Maximum Continuous Drain Current

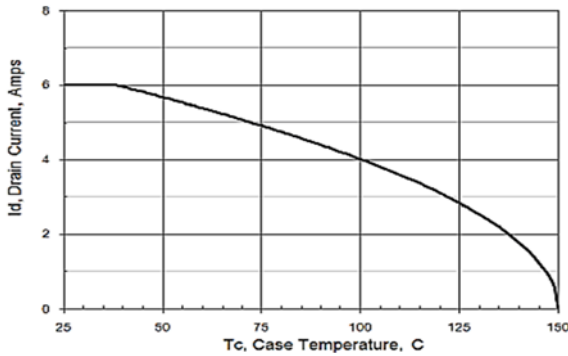


Fig4 Typical Output Characteristics

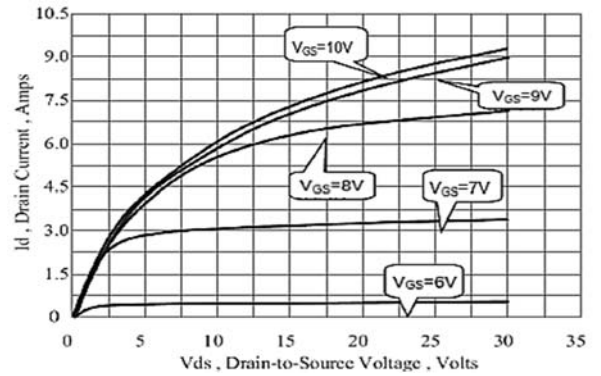


Fig5 Maximum Transient Thermal Impedance

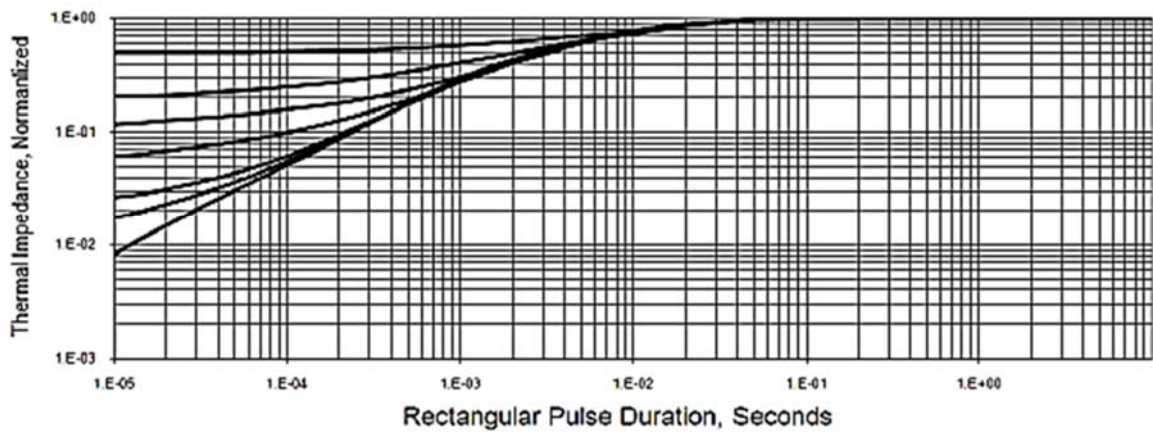




Fig6 Peak Current Capability

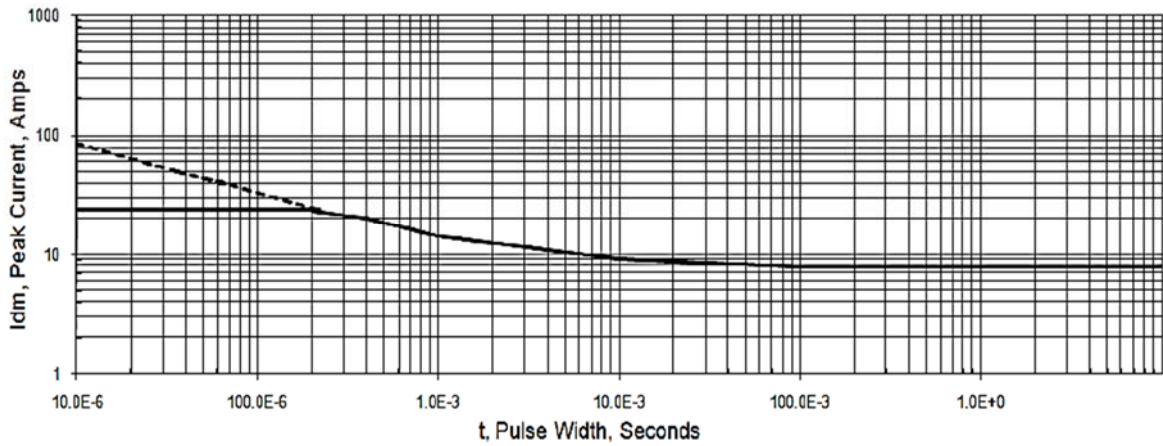


Fig7 Typical Drain to Source ON Resistance vs Drain Current

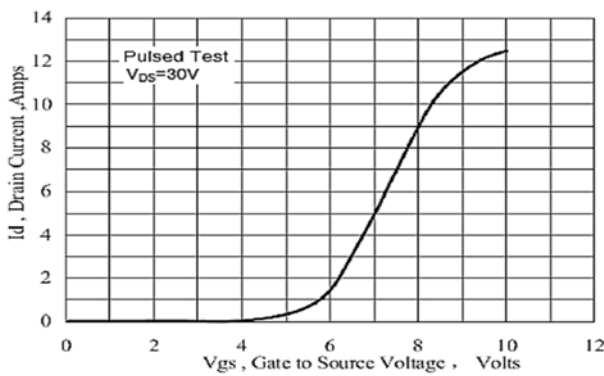


Fig8 Typical Drain to Source on Resistance vs Gate Voltage and Drain Current

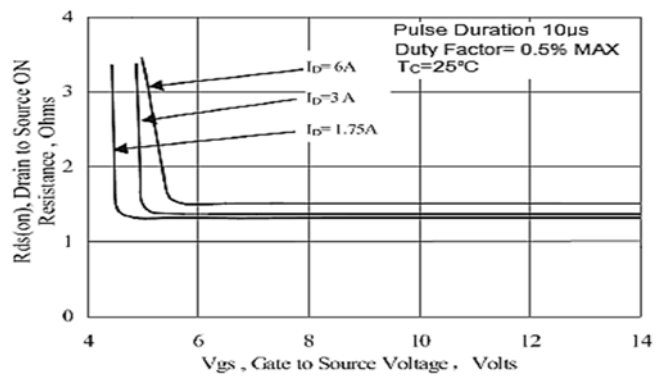


Fig9 Typical Drain to Source on Resistance vs Drain Current

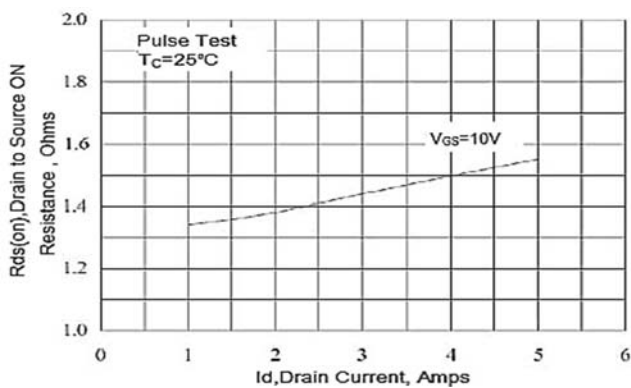


Fig10 Typical Drain to Source Resistance vs Junction Temperature

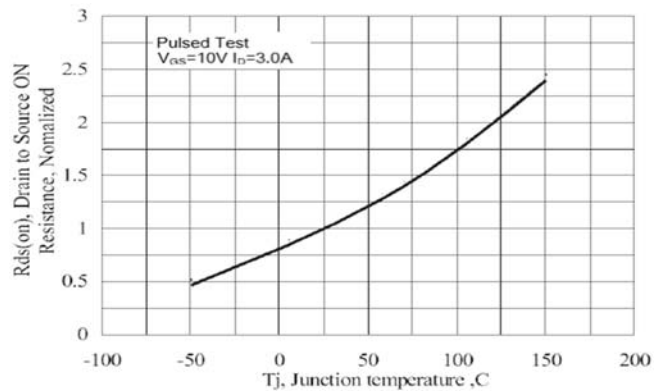




Fig11 Typical Threshold Voltage vs Junction Temperature

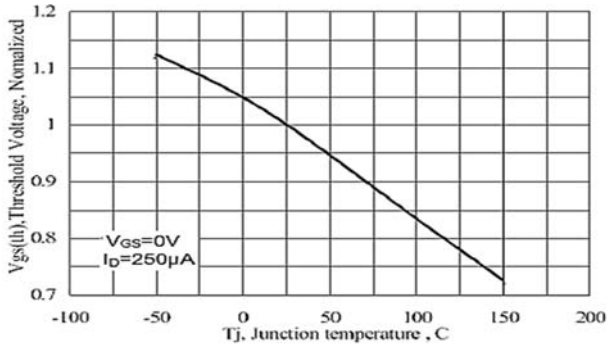


Fig12 Typical Breakdown Voltage vs Junction Temperature

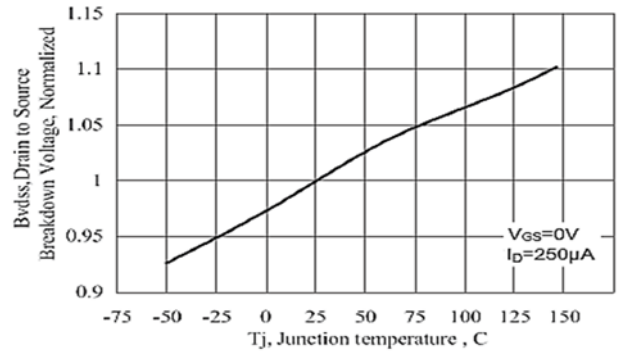


Fig13 Capacitance vs Vds

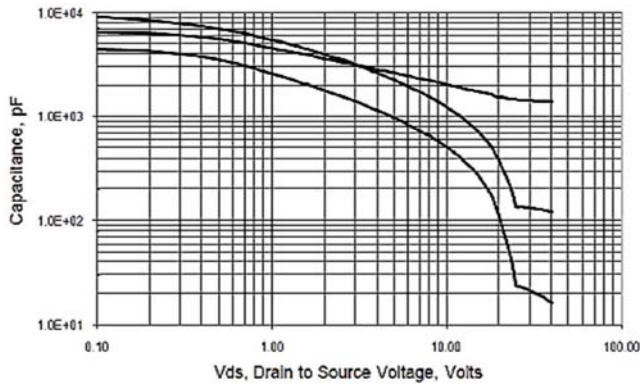


Fig14 Typical Gate Charge vs Gate to Source Voltage

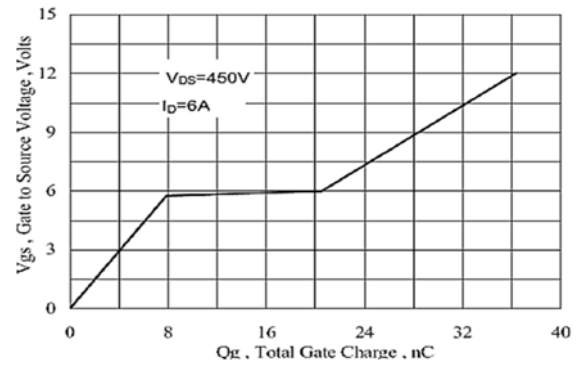


Fig15 Typical Body Diode Transfer Characteristics

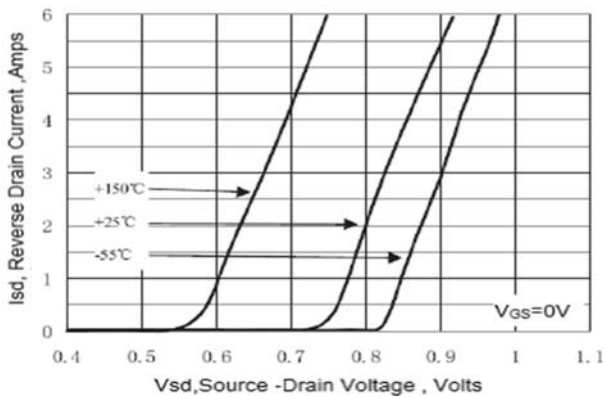
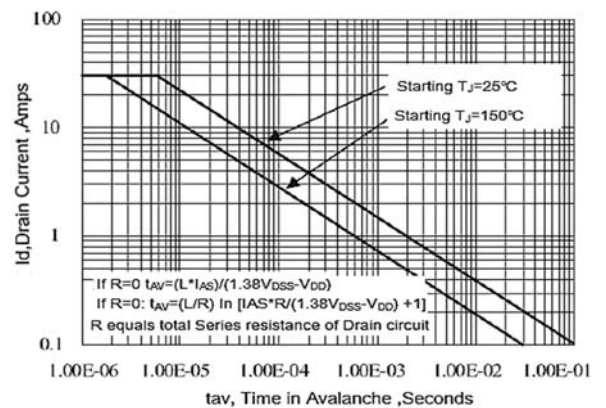


Fig16 Unclamped Inductive Switching Capability





Test Circuits and Waveforms

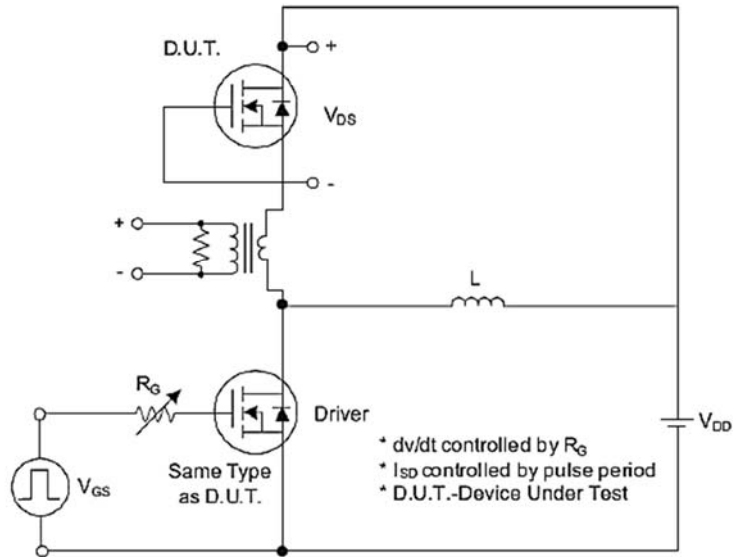


Fig17 Peak Diode Recovery dv/dt Test Circuit

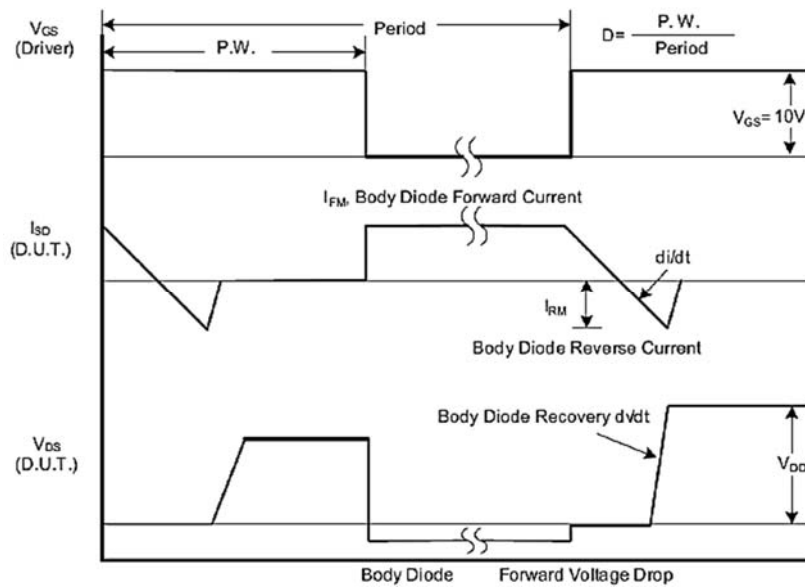


Fig18 Peak Diode Recovery dv/dt Waveforms



Fig19 Gate Charge Test Circuit

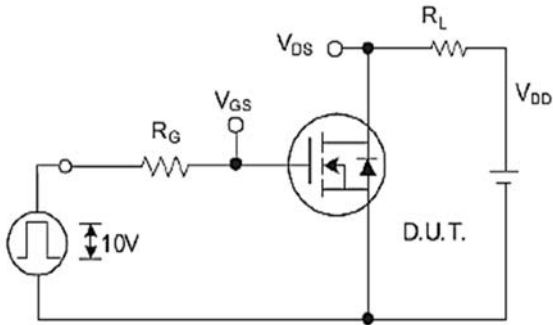


Fig20 Gate Charge Waveform

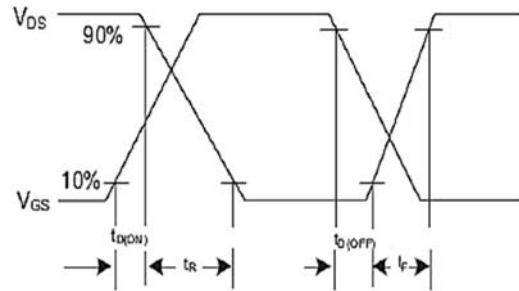


Fig21 Resistive Switching Test Circuit

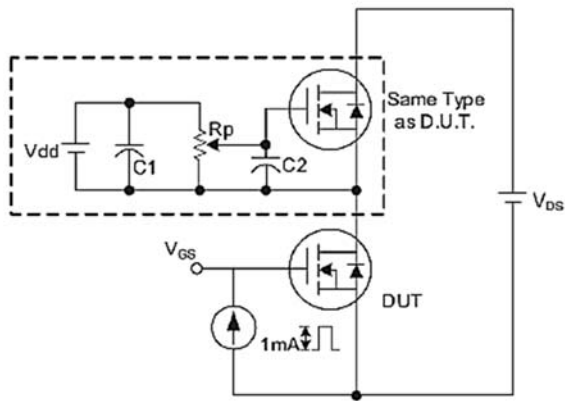


Fig22 Resistive Switching Waveforms

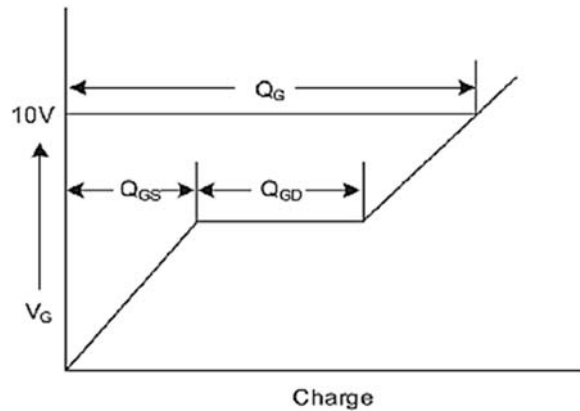


Fig23 Diode Reverse Recovery Test Circuit

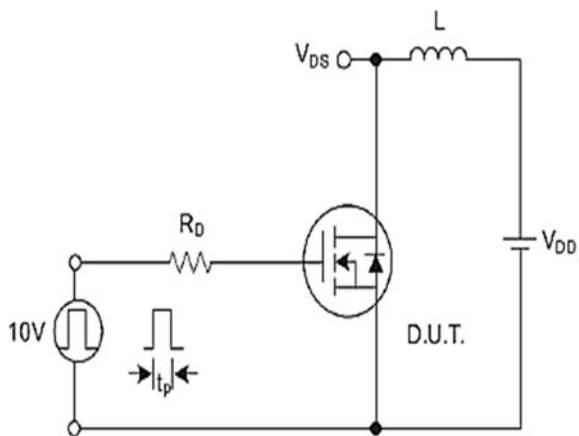
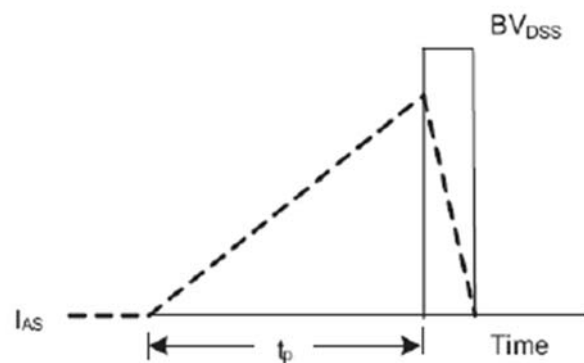


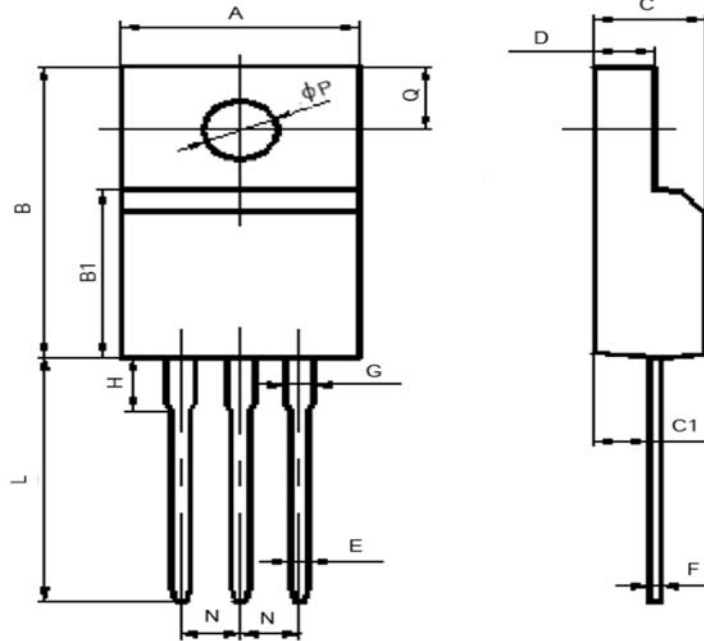
Fig24 Diode Reverse Recovery Waveform





PACKAGE INFORMATION

Dimension in TO-220F (Unit: mm)



Symbol	Millimeters	
	Min	Max
A	9.600	10.40
B	15.40	16.20
B1	8.900	09.50
C	4.300	04.90
C1	2.100	03.00
D	2.400	03.00
E	0.600	01.00
F	0.300	0.600
G	1.120	1.420
H	3.400	3.800
	2.000	2.400
L	12.00	14.00
	6.300	7.700
N	2.340	2.740
Q	3.150	3.550
ϕP	3.000	3.300



IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or severe property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.