

**DESCRIPTION**

The AM90R950TF is available in TO-220F Package.

BVDSS	RDS(ON)	ID
900V	950mΩ	8A

APPLICATION

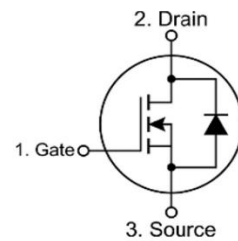
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

ORDERING INFORMATION

Package Type	Part Number	
TO-220F	TF	AM90R950TF
Note	SPQ: 50pcs/Tube	
AiT provides all RoHS products		

FEATURE

- Fast Switching
- Low Gate Charge and $R_{DS(ON)}$
- $R_{DS(ON)}$, Typ = 950mΩ @ $V_{GS}=10V$
- 100% Single Pulse avalanche energy Test

PIN DESCRIPTION

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

ABSOLUTE MAXIMUM RATINGS

$T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	900	V
Gate-to-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	8	A
Continuous Drain Current $T_C=100^\circ\text{C}$		5.4	A
Pulsed Drain Current	I_{DM}	32	A
Single Pulse Avalanche Energy ¹	E_{AS}	75	mJ
Power Dissipation	P_D	34	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$
Thermal Resistance Junction to Case	$R_{\theta JC}$	3.7	$^\circ\text{C/W}$

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.

**ELECTRICAL CHARACTERISTICS**T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	900	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =720V, V _{GS} =0V	-	-	1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±30V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	2.0	3.0	4.0	V
Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =4A	-	950	1200	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 100V f = 1MHz	-	703	-	pF
Output Capacitance	C _{oss}		-	26	-	
Reverse Transfer Capacitance	C _{rss}		-	1.4	-	
Total Gate Charge	Q _g	V _{DS} = 400V, I _D = 20A V _{GS} = 10V	-	16	-	nC
Gate-Source Charge	Q _{gs}		-	3.6	-	
Gate-Drain Charge	Q _{gd}		-	7.1	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} = 400V, I _D = 20A, V _{GS} = 10V, R _G =10Ω	-	38	-	ns
Rise Time	t _r		-	52	-	
Turn-Off Delay Time	t _{d(off)}		-	28	-	
Fall Time	t _f		-	10	-	
Drain-Source Body Diode Characteristics						
Maximum Pulsed Current (Body Diode)	I _S		-	-	8	A
Source Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	-	1.2	V
Reverse Recovery Time	T _{rr}	I _S =10A, di/dt=100A/us	-	194	-	ns
Reverse Recovery Charge	Q _{rr}		-	2.5	-	nC

Note:

1. The test condition is V_{DD} = 70V, V_{GS} = 10V, L = 10mH, R_G = 30Ω



TYPICAL PERFORMANCE CHARACTERISTICS

Fig1. Typical Output Characteristics

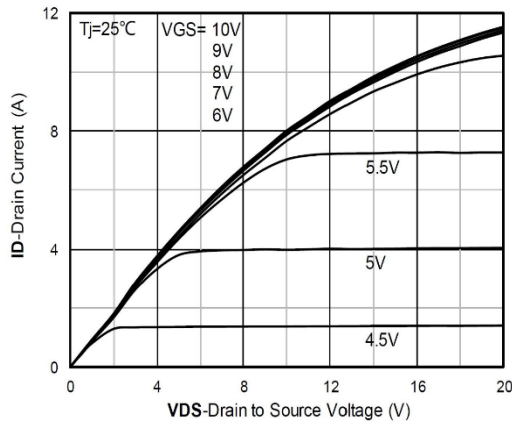


Fig 2. Transfer Characteristics

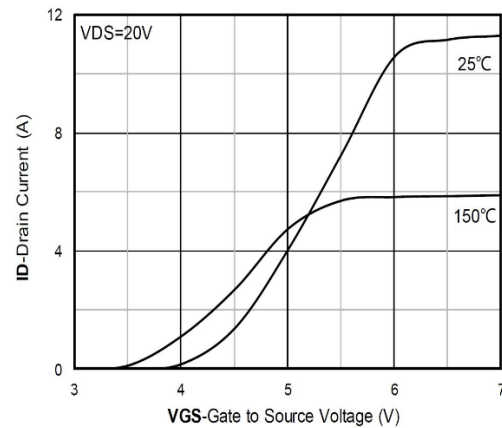


Fig 3. Capacitance Characteristics

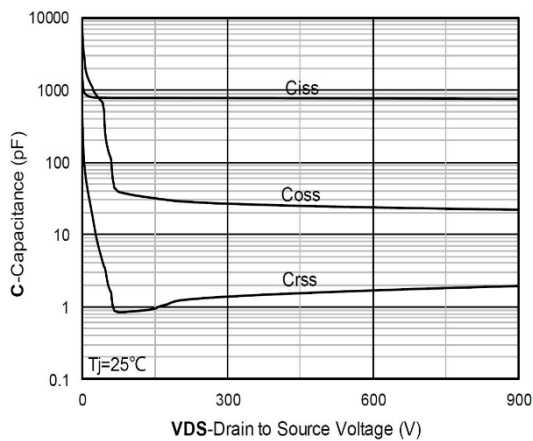


Fig 4. VGS vs. Gate Charge

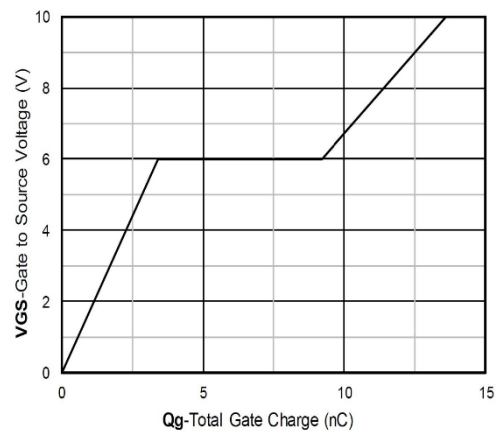


Fig 5. On-Resistance vs Gate to Source Voltage

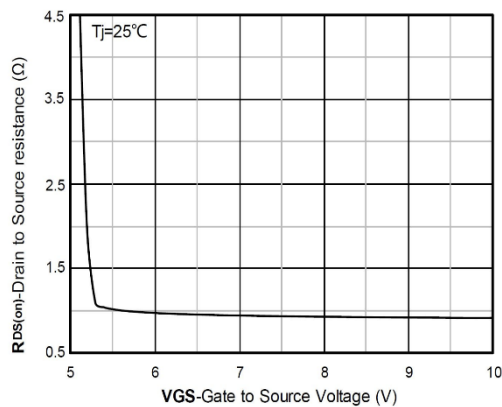


Fig 6. Normalized On-Resistance

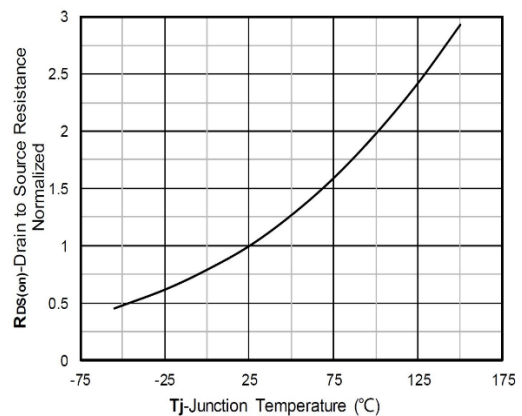




Fig7. RDS(on) VS Drain Current

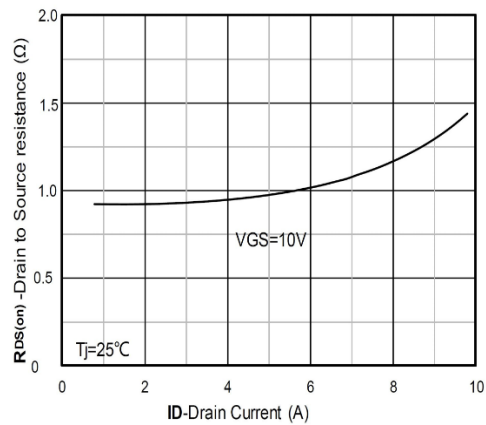


Fig 8. Forward characteristics of reverse diode

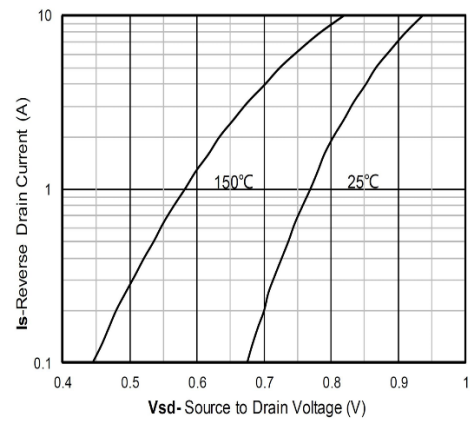


Fig 9. Normalized breakdown voltage

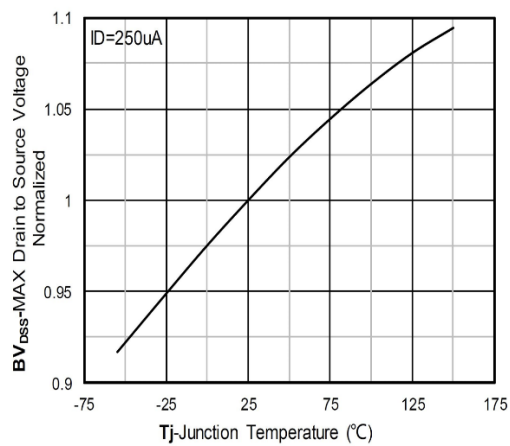


Fig 10. Normalized Threshold voltage

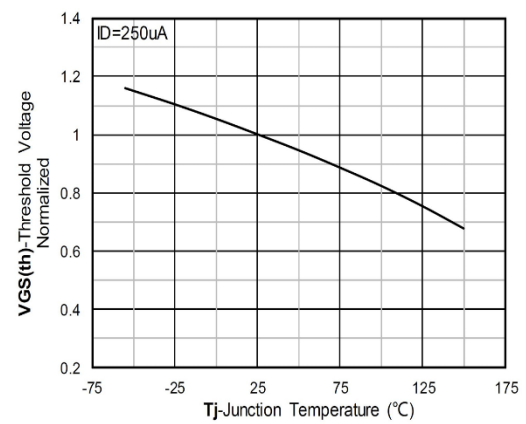


Fig 11. Current dissipation

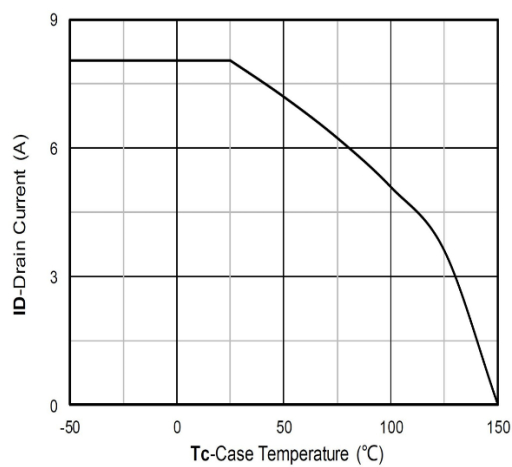


Fig 6. Power dissipation

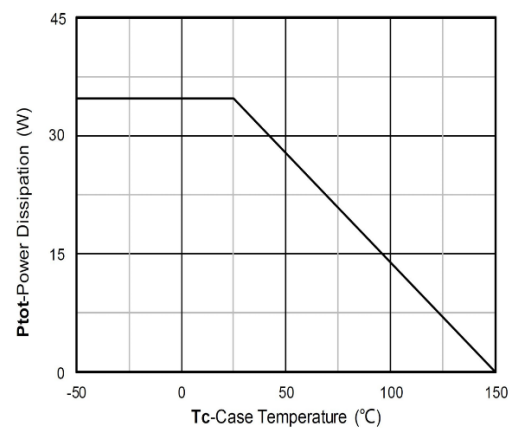




Fig 13. Maximum Transient Thermal Impedance

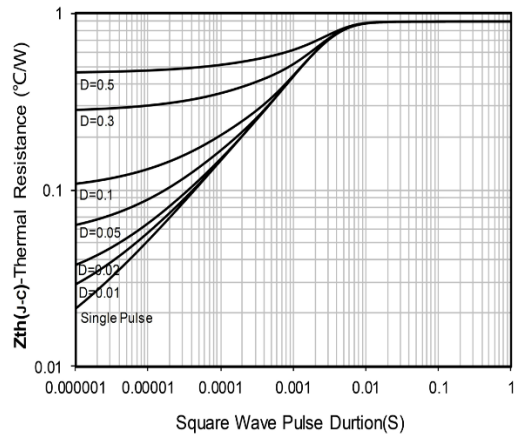
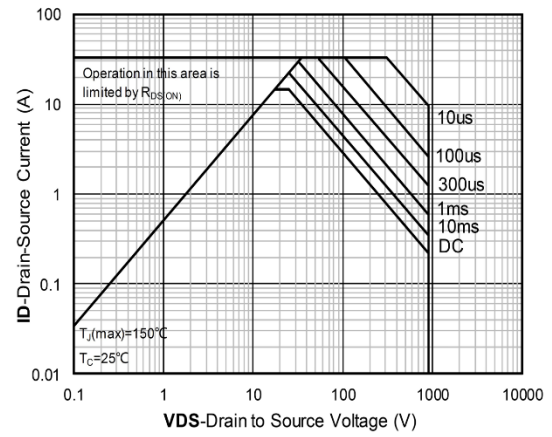
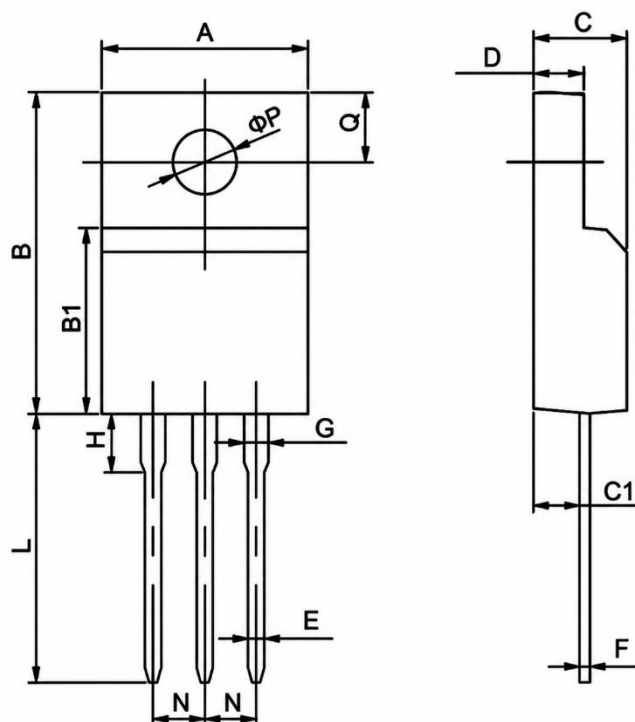


Fig 14. Safe Operation Area



**PACKAGE INFORMATION**

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

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