

**DESCRIPTION**

The AM07N80TF is available in TO-220F Package.

VDSS	RDSON	ID
800V	1.5Ω	7A

APPLICATIONS

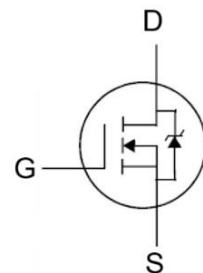
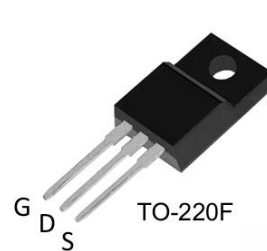
- Adaptor
- LCD Panel Power
- Other Applications

ORDERING INFORMATION

Package Type	Part Number	
TO-220F SPQ: 50pcs /Tube 1,000pcs/Box	T3F	AM07N80T3FU
Note	U: Tube	
AiT provides all RoHS products		

FEATURES

- Proprietary New Planar Technology
- $R_{DS(ON), Typ.} = 1.5 \Omega @ V_{GS} = 10V$
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

PIN DESCRIPTION

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

ABSOLUTE MAXIMUM RATINGS

$T_C = 25^\circ\text{C}$, unless otherwise Noted

V _{DSS} , Drain-to-Source Voltage ⁽¹⁾			800V
V _{GSS} , Gate-to-Source Voltage			±30V
I _D , Continue Drain Current			7A
		T _C =100°C	See Fig. 3
I _{DM} , Pulsed Drain Current at V _{GS} =10V ⁽²⁾			See Fig. 6
E _{AS} , Single Pulse Avalanche Energy			580mJ
dv/dt, Peak Diode Recovery dv/dt ⁽³⁾			5V/ns
P _D , Power Dissipation			40W
P _D , Derating Factor above 25°C			0.32W/°C
T _J , Operating Junction Temperature Range			-55°C~+150°C
T _{STG} , Storage Temperature Range			-55°C~+150°C
T _L	Maximum Temperature for Soldering Leads at 0.063in (1.6mm) from Case for 10 seconds, Package Body for 10 seconds		300°C
T _{PAK}			260°C
R _{θJC} , Thermal Resistance, Junction-to-Case			3.125°C/W
R _{θJA} , Thermal Resistance, Junction-to-Ambient			100°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.

(1) $T_J = +25^\circ\text{C} \sim +150^\circ\text{C}$

(2) Repetitive rating; pulse width limited by maximum junction temperature.

(3) $I_{SD} = 7.0A$ di/dt < 100 A/μs, $V_{DD} < BV_{DSS}$, $T_J = +150^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS**T_J = 25°C, unless otherwise Noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristic						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	800	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} = 800V, V _{GS} =0V	-	-	1	μA
		V _{DS} = 640V, V _{GS} =0V, T _J = 125°C	-	-	100	
Gate-to-Source Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} =+30V	-	-	100	nA
		V _{DS} = 0V, V _{GS} = -30V			-100	
On Characteristic						
Static Drain-to-Source On-Resistance*	R _{DS(ON)}	V _{GS} =10V, I _D =3.5A	-	1.5	1.8	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0	-	4.0	V
Forward Transconductance*	g _{fs}	V _{DS} =30V, I _D =7A	-	5.5	-	S
Dynamic Characteristic						
Input Capacitance	C _{iSS}	V _{DS} =25V, V _{GS} =0V, f=0.1MHz	-	1350	-	pF
Reverse Transfer Capacitance	C _{rSS}		-	12	-	
Output Capacitance	C _{oSS}		-	120	-	
Total Gate Charge	Q _g	V _{DD} = 400V, I _D =7A, V _{GS} = 0V ~ 10V	-	34	-	nC
Gate-to-Source Charge	Q _{gS}		-	6	-	
Gate-to-Drain (Miller) Charge	Q _{gd}		-	14	-	
Switching Characteristic						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 400V, R _G =12Ω V _{GS} = 10V, I _D =7A	-	15	-	ns
Rise Time	t _r		-	25	-	
Turn-Off Delay Time	t _{d(off)}		-	50	-	
Fall Time	t _f		-	30	-	
Source- Drain Body Diode Characteristics						
Continuous Source Current *	I _{SD}	Integral PN-diode in MOSFET	-	-	7	A
Pulsed Source Current *	I _{SM}		-	-	28	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =7A	-	-	1.50	V
Reverse Recovery Time	t _{rr}	I _F =7A, V _{GS} = 0V,	-	185	-	ns
Reverse Recovery Charge	Q _{rr}	di/dt=100A/μs	-	0.85	-	uC

* Pulse width≤380μs, duty cycle≤2%.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Maximum Effective Thermal Impedance, Junction-to-Case

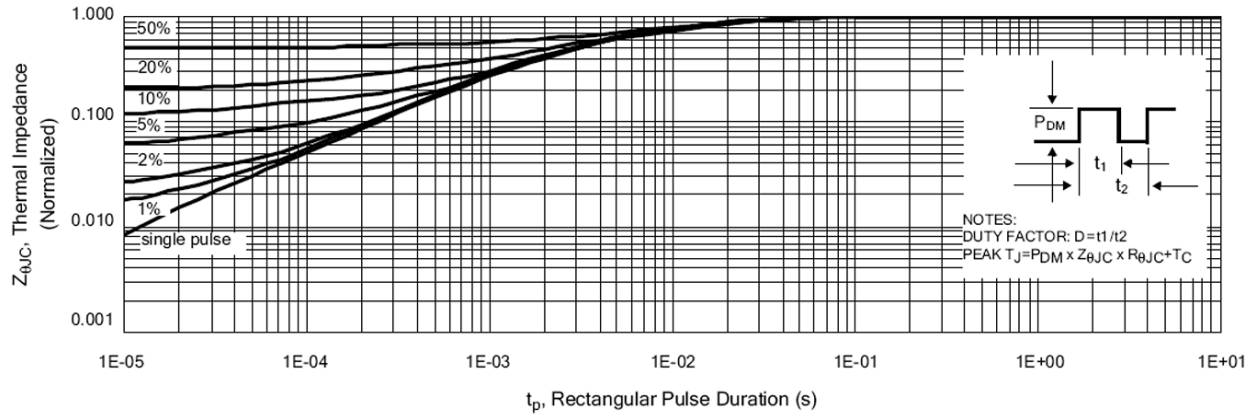


Fig 2. Maximum Power Dissipation vs. Case Temperature

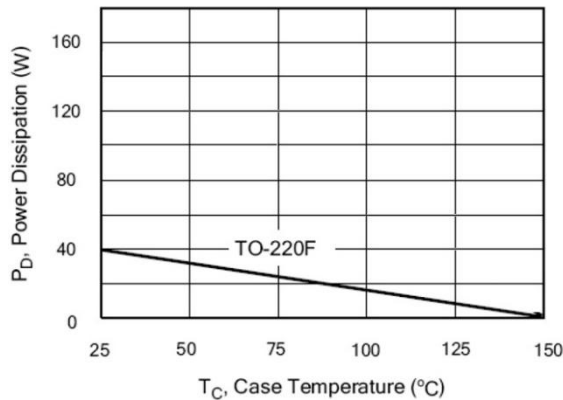


Fig 3. Maximum Continuous Drain Current vs. Case Temperature

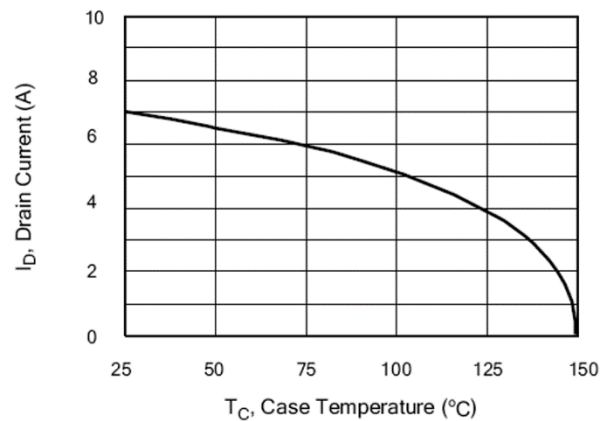


Fig 4. Typical Output Characteristics

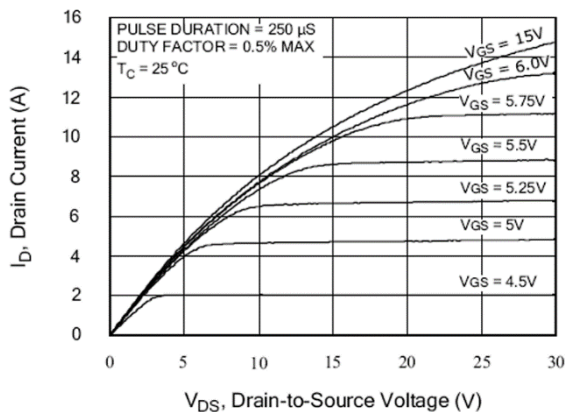


Fig 5. Typical Drain-to-Source on Resistance vs. Gate Voltage and Drain Current

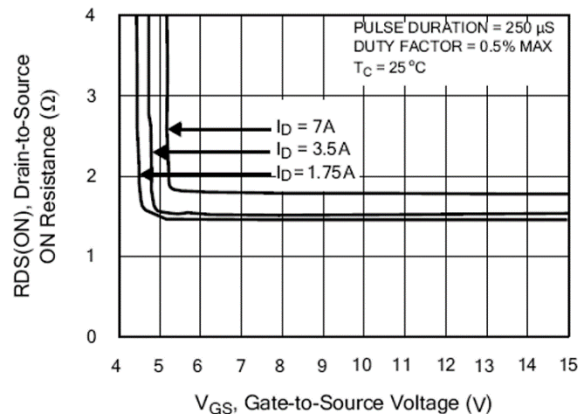




Fig 6. Maximum Peak Current Capability

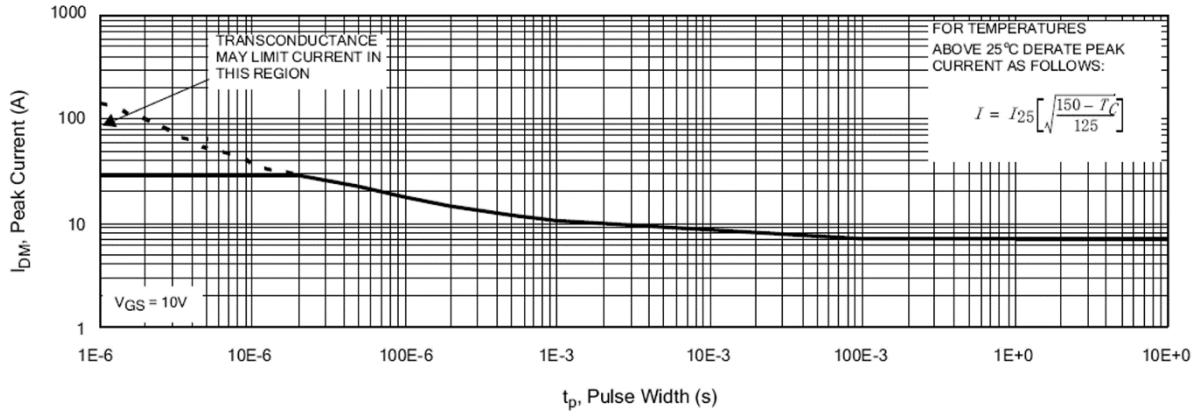


Fig 7. Typical Transfer Characteristics

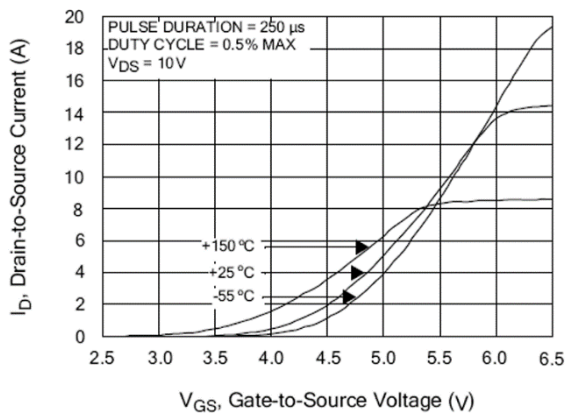


Fig 8. Unclamped Inductive Switching Capability

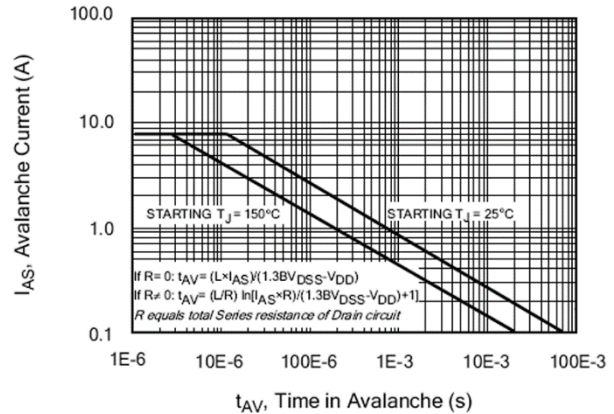


Fig 9. Typical Drain-to-Source on Resistance vs. Drain Current

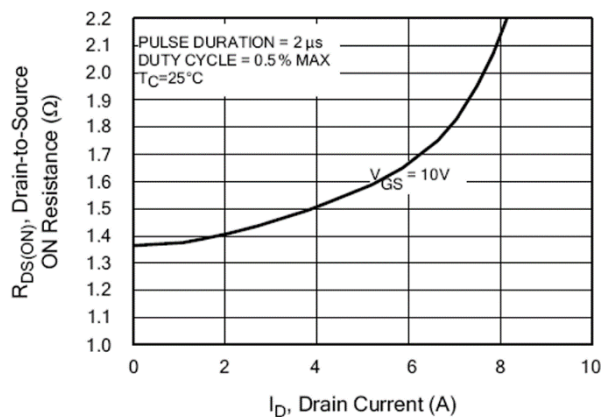


Fig 10. Typical Drain-to-Source on Resistance vs. Junction Temperature

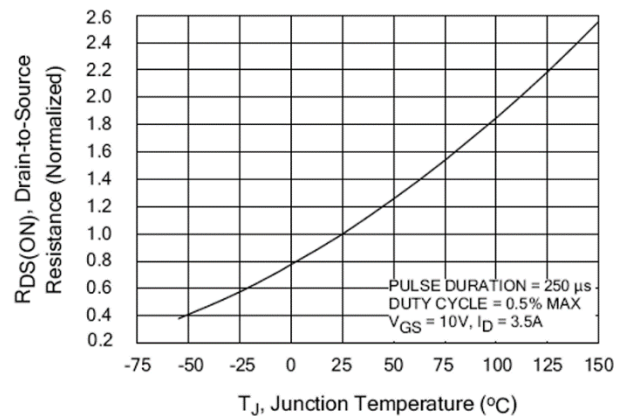




Fig 11. Typical Breakdown Voltage
vs. Junction Temperature

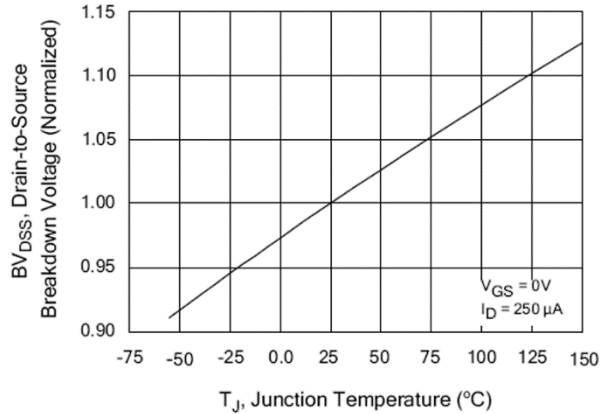


Fig 12. Typical Threshold Voltage
vs. Junction Temperature

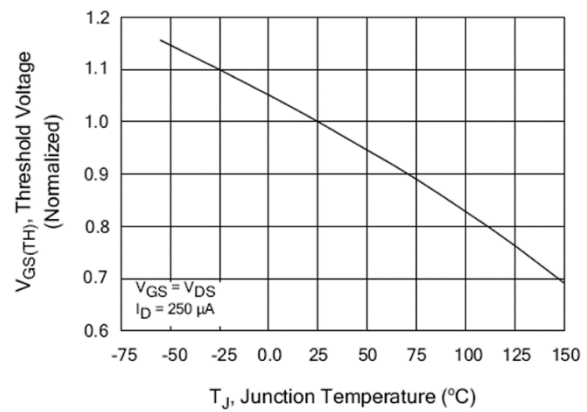


Fig 13. Maximum Forward Bias Safe Operating Area

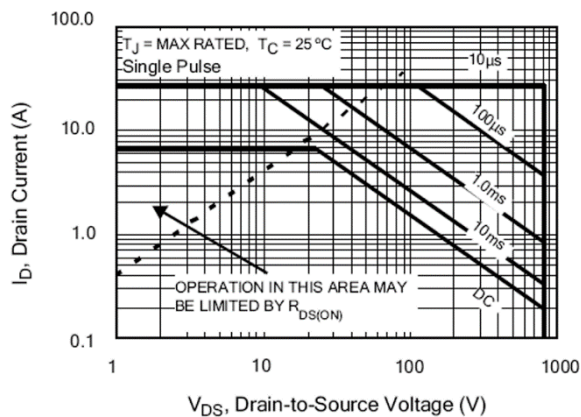


Fig 14. Typical Capacitance
vs. Drain-to-Source Voltage

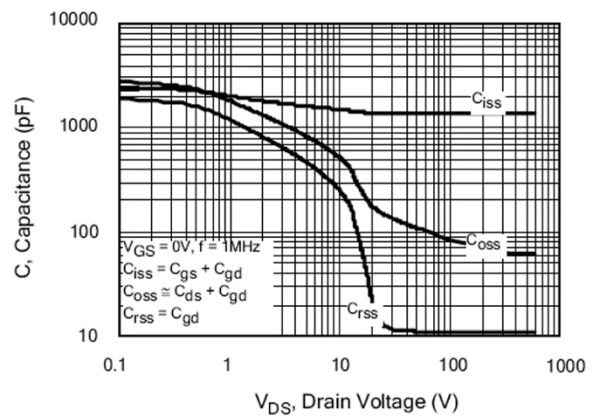


Fig 15. Typical Gate Charge
vs. Drain-to-Source Voltage

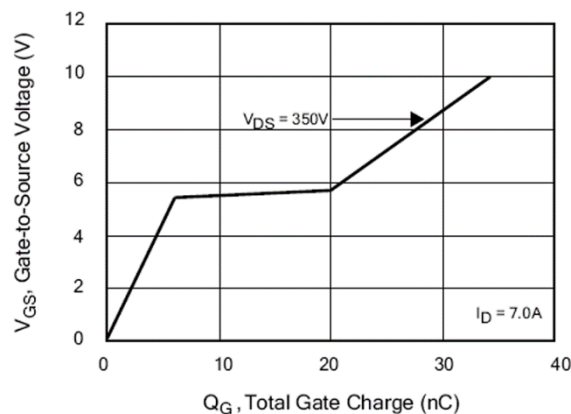
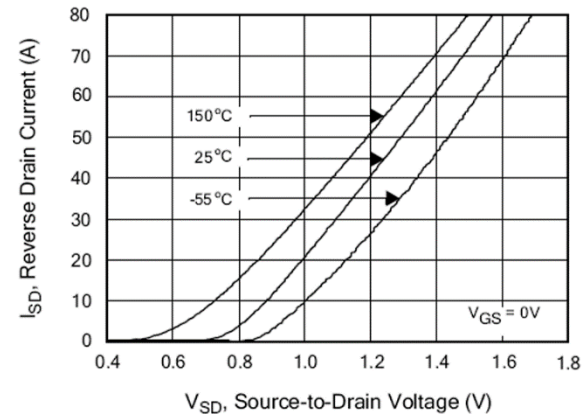


Fig 16. Typical Body Diode Transfer Characteristics





TEST CIRCUITS AND WAVEFORMS

Fig 17. Peak Diode Recovery dv/dt Test Circuit

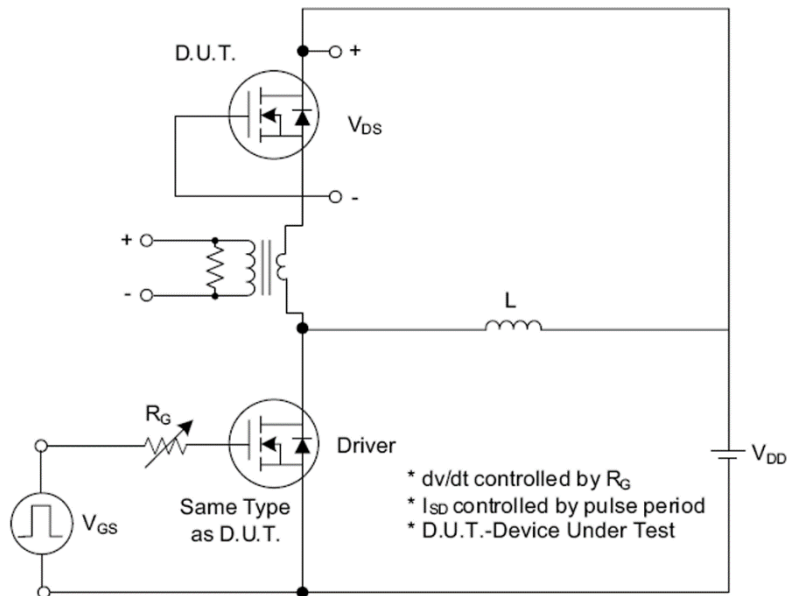


Fig 18. Peak Diode Recovery dv/dt Waveforms

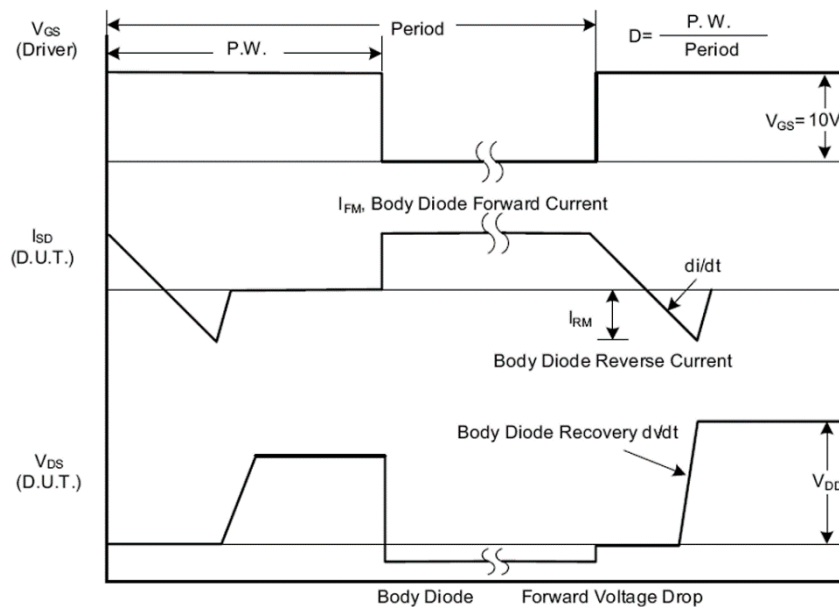




Fig 19. Switching Teat Circuit

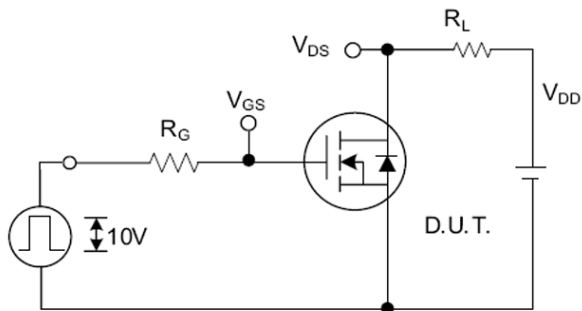


Fig 20. Switching Waveforms

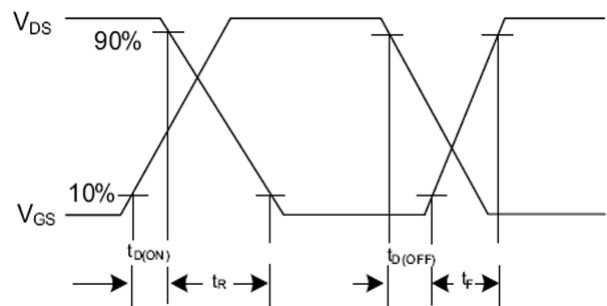


Fig 21. Gate Charge Test Circuit

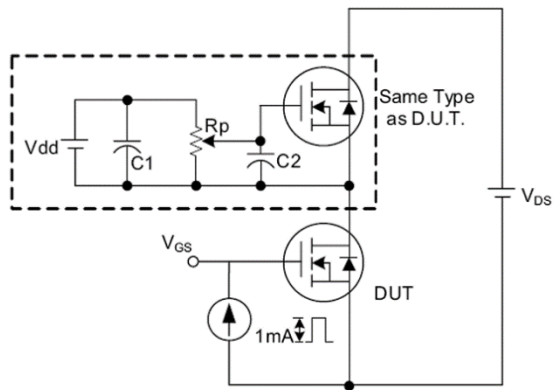


Fig 22. Gate Charge Waveform

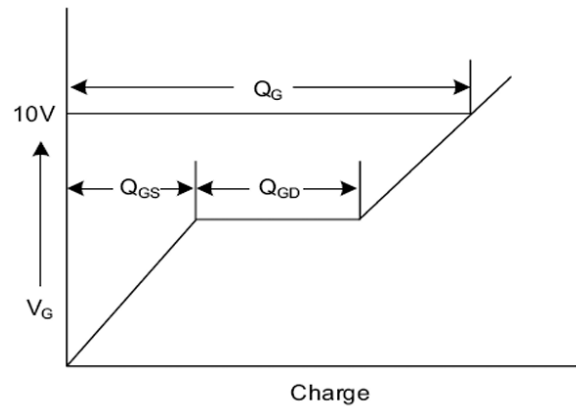


Fig 23. Unclamped Inductive Switching Teat Circuit

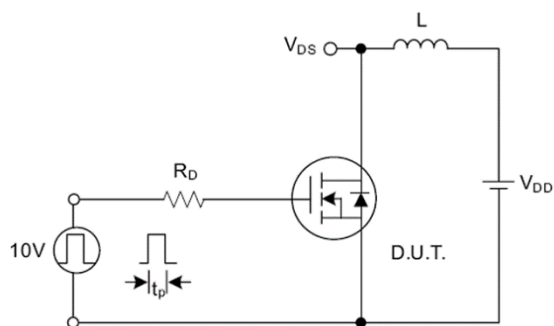
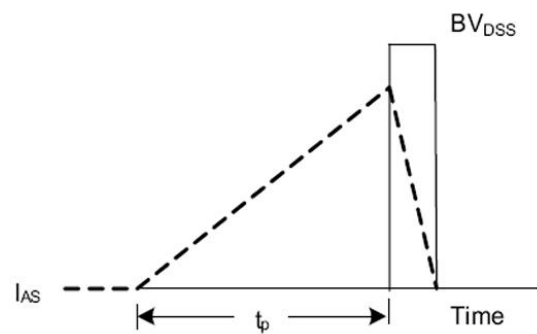
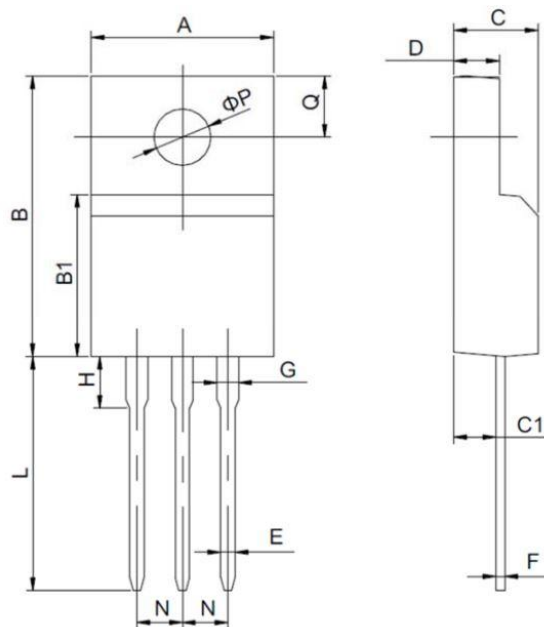


Fig 24. Unclamped Inductive Switching Waveform



**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



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. 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 server 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.