DESCRIPTION

The AM07N80T is available in TO-220 Package.

VDSS	RDSON	ID
800V	1.5Ω	7A

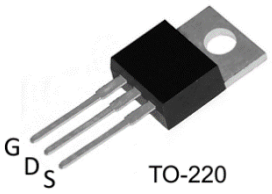
FEATURES

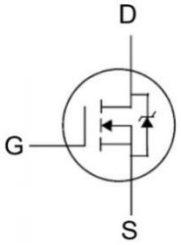
- Proprietary New Planar Technology
- $R_{DS(ON),\ Typ.}$=1.5 Ω@V_{GS}=10V
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

APPLICATIONS

- Adaptor
- LCD Panel Power
- Other Applications

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 1,000pcs/Box	T3	AM07N80T3U
Note	U: Tube	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_C=25℃, 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℃	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		150W
P_D, Derating Factor above 25℃		1.20W/℃
T_J, Operating Junction Temperature Range		-55℃~+150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃
T_L	Maximum Temperature for Soldering Leads at 0.063in (1.6mm) from Case for 10 seconds, Package Body for 10 seconds	300℃
T_{PAK}		260℃
$R_{\theta JC}$, Thermal Resistance, Junction-to-Case		0.83℃/W
$R_{\theta JA}$, Thermal Resistance, Junction-to-Ambient		62℃/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℃ ~ +150℃

(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℃

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*	gfs	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, di/dt=100A/μs	-	185	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.85	-	uC

* Pulse width≤380μs, duty cycle≤2%.

TYPICAL PERFORMANCE CHARACTERISTICS

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

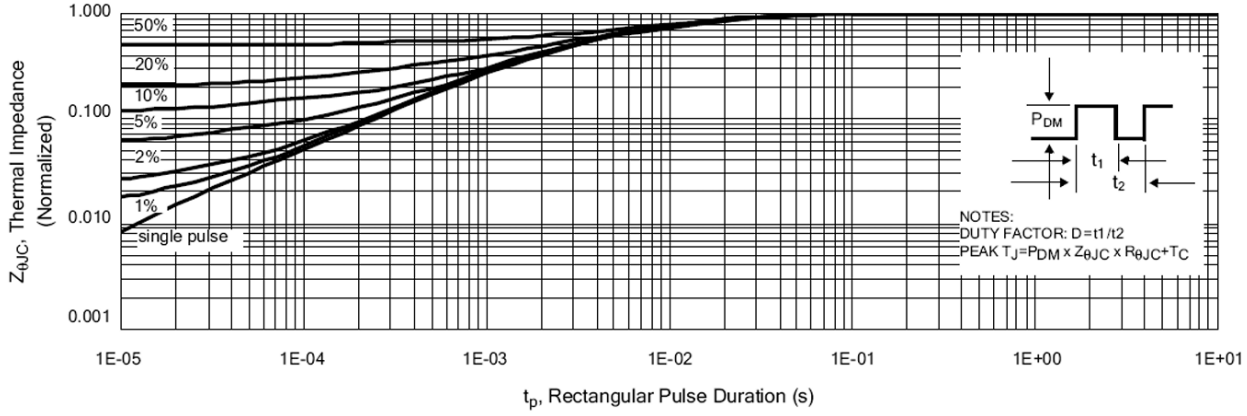


Fig 2. Maximum Power Dissipation vs. Case Temperature

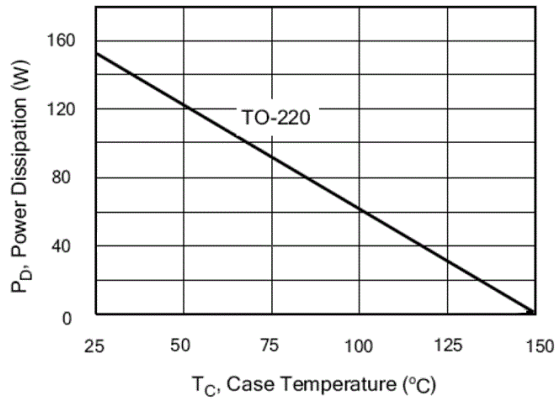


Fig 3. Maximum Continuous Drain Current vs. Case Temperature

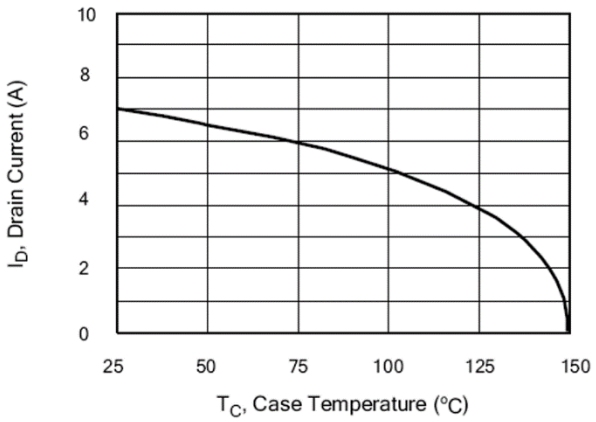


Fig 4. Typical Output Characteristics

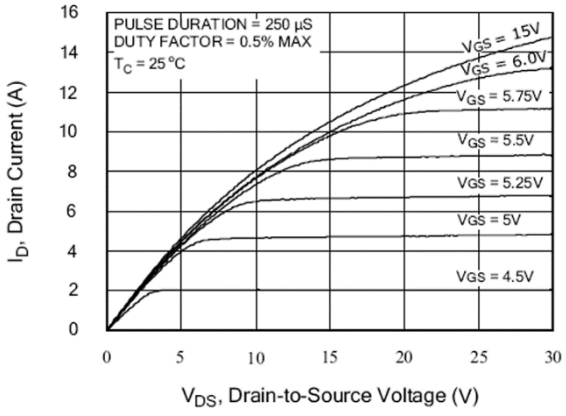


Fig 5. Typical Drain-to-Source on Resistance vs. Gate Voltage and Drain Current

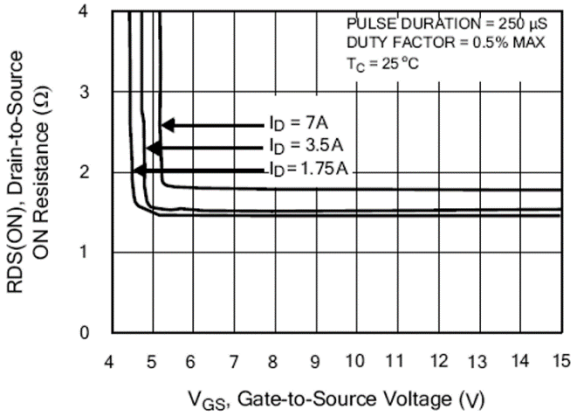


Fig 6. Maximum Peak Current Capability

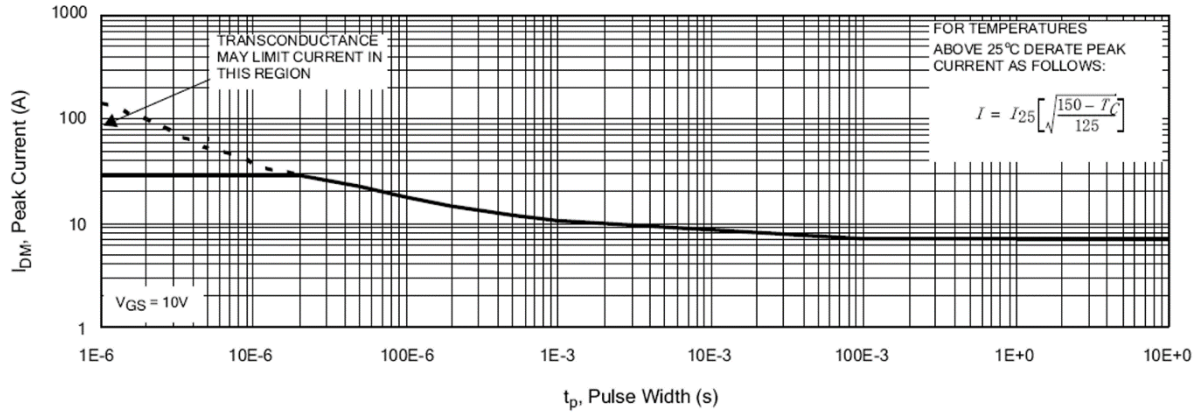


Fig 7. Typical Transfer Characteristics

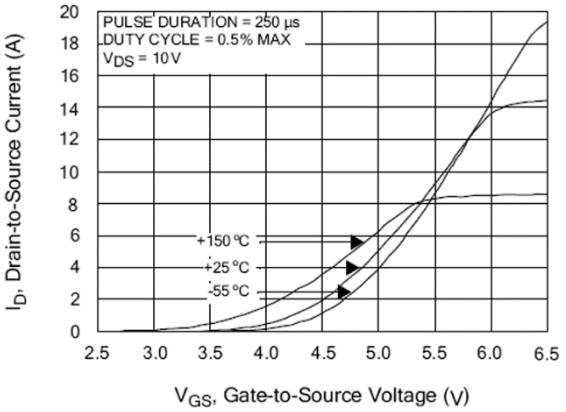


Fig 8. Unclamped Inductive Switching Capability

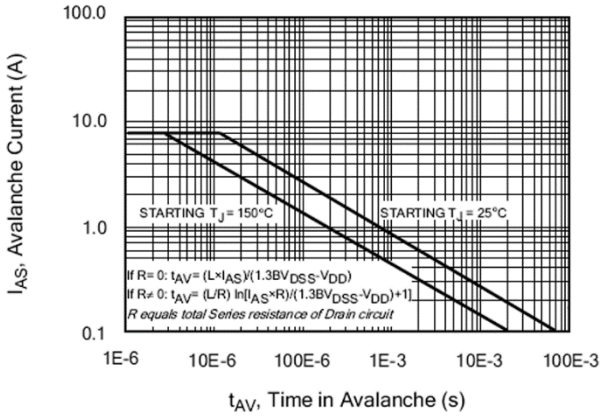


Fig 9. Typical Drain-to-Source on Resistance vs. Drain Current

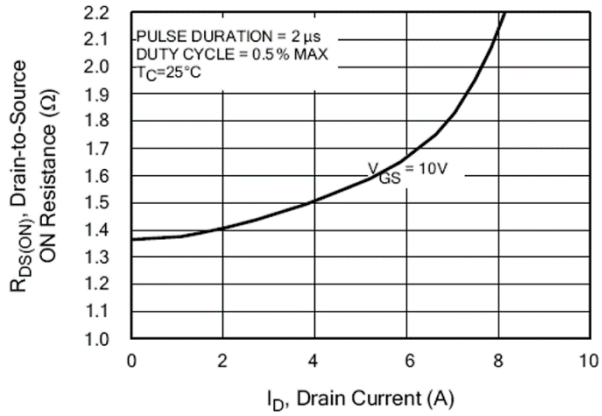


Fig 10. Typical Drain-to-Source on Resistance vs. Junction Temperature

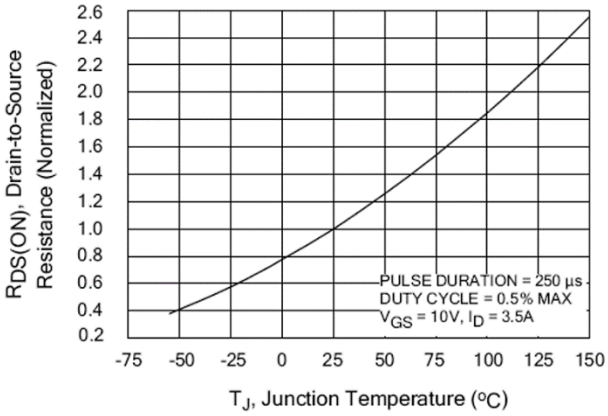


Fig 11. Typical Breakdown Voltage vs. Junction Temperature

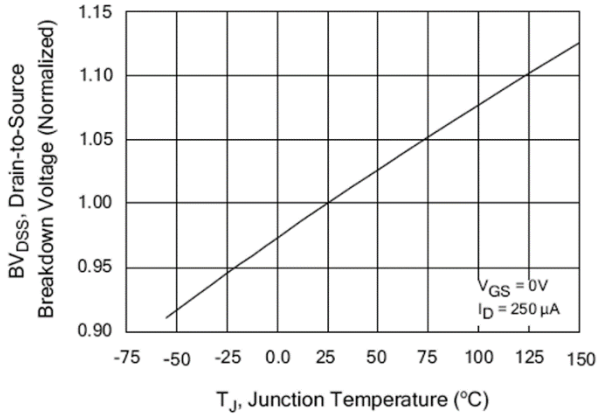


Fig 12. Typical Threshold Voltage vs. Junction Temperature

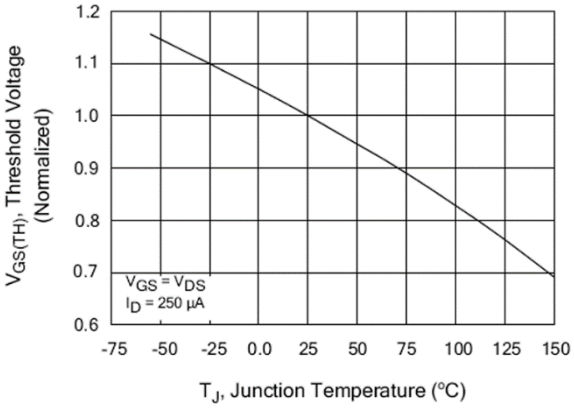


Fig 13. Maximum Forward Bias Safe Operating Area

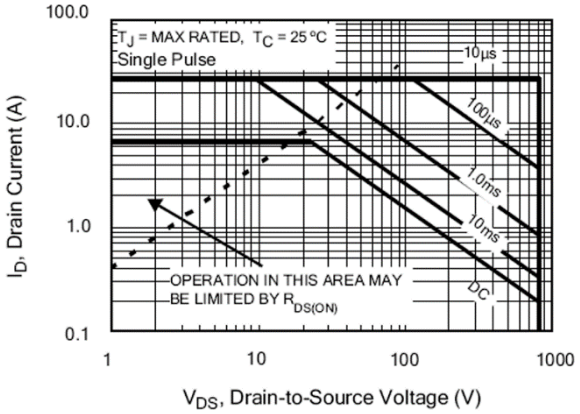


Fig 14. Typical Capacitance vs. Drain-to-Source Voltage

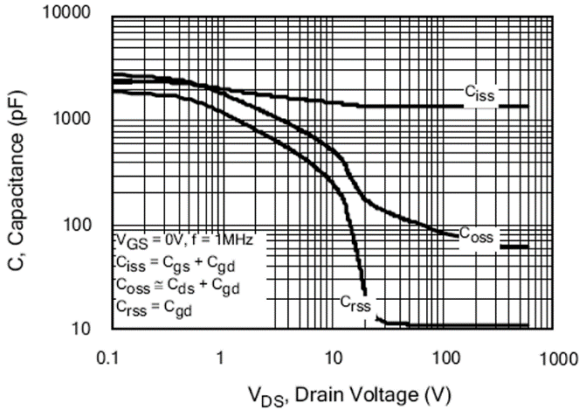


Fig 15. Typical Gate Charge vs. Drain-to-Source Voltage

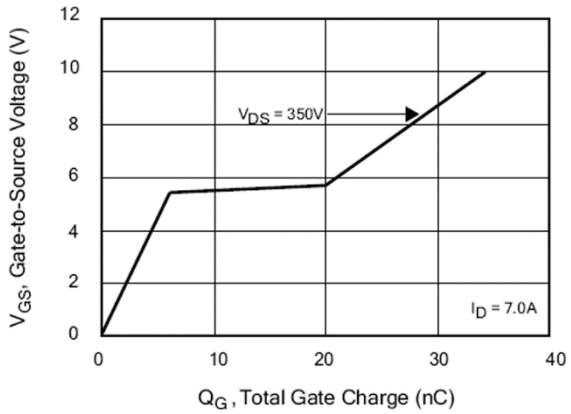
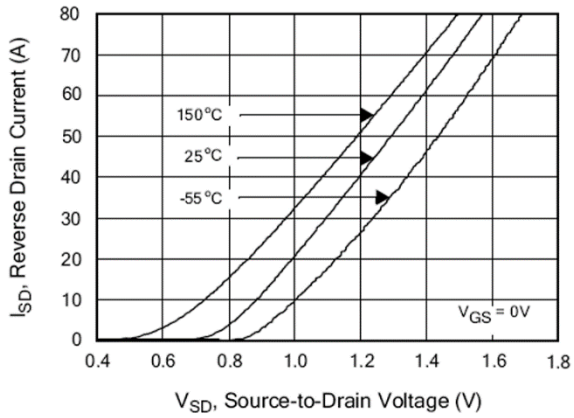


Fig 16. Typical Body Diode Transfer Characteristics



TEST CIRCUITS AND WAVEFORMS

Fig 17. Peak Diode Recovery dv/dt Test Circuit

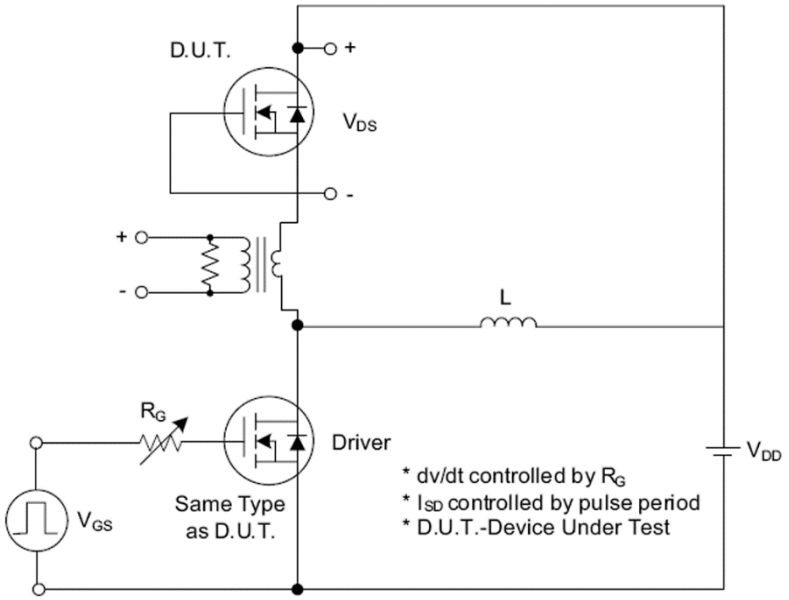


Fig 18. Peak Diode Recovery dv/dt Waveforms

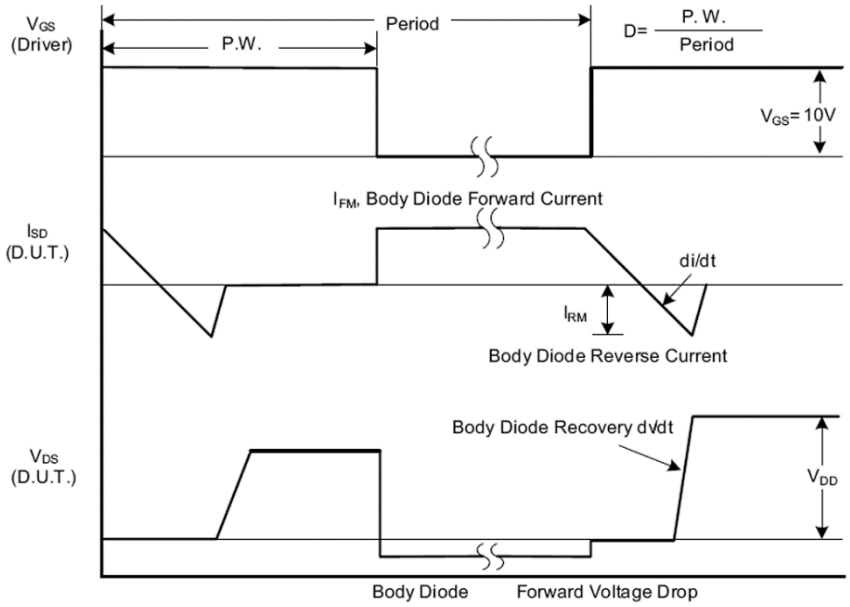


Fig 19. Switching Teat Circuit

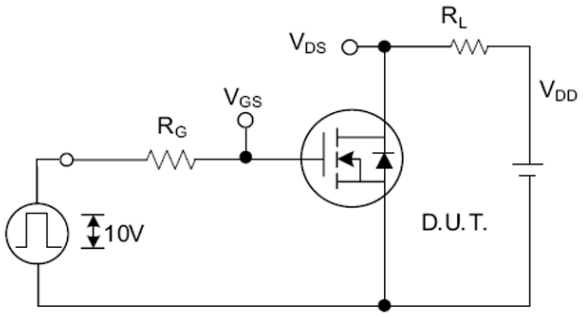


Fig 20. Switching Waveforms

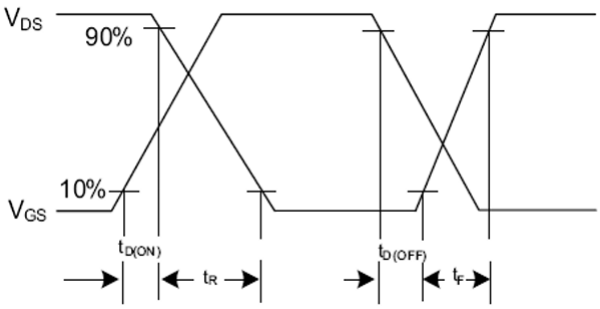


Fig 21. Gate Charge Test Circuit

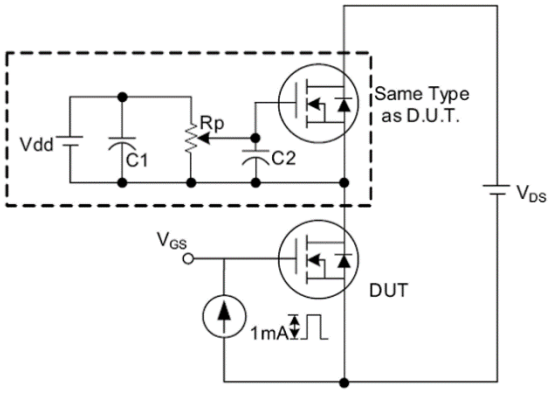


Fig 22. Gate Charge Waveform

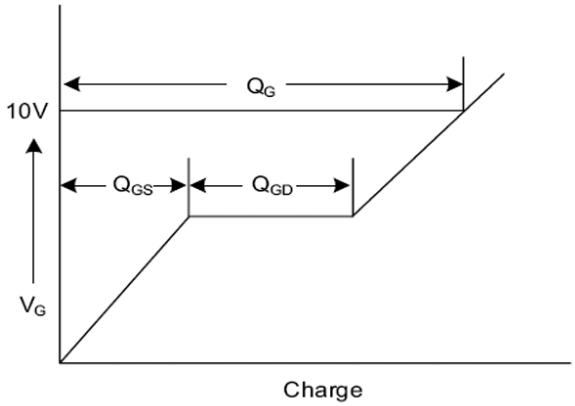


Fig 23. Unclamped Inductive Switching Teat Circuit

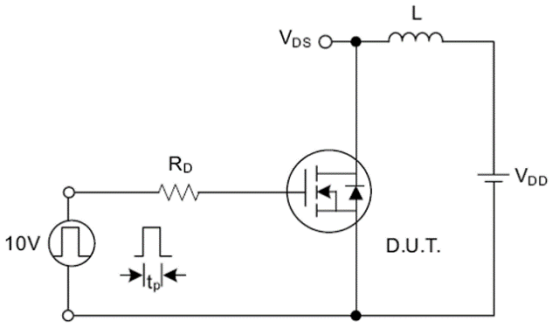
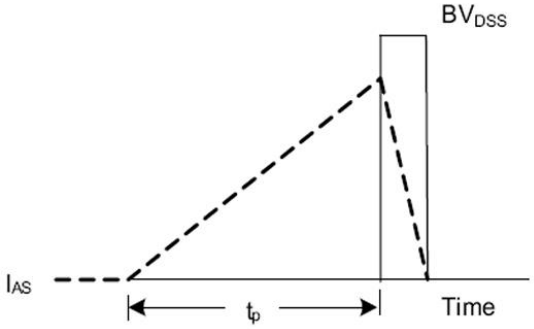
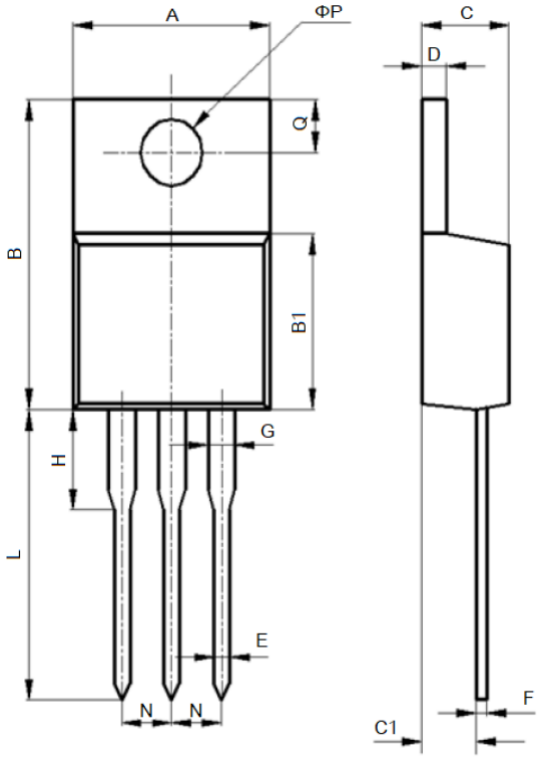


Fig 24. Unclamped Inductive Switching Waveform



PACKAGE INFORMATION

Dimension in TO-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

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