DESCRIPTION

The AM08N65 is available in TO-220 and TO220F Package

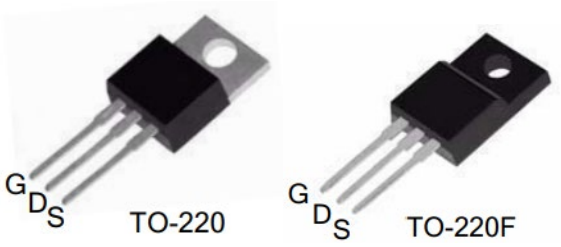
FEATURE

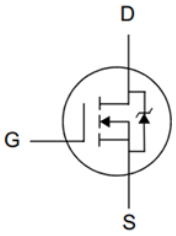
- Low ON Resistance
- Low Gate Charge
- Peak Current vs Pulse Width Curve

APPLICATIONS

- Adaptor
- Charger
- SMPS Power Supply
- LCD Panel Power

PIN DESCRIPTION





ORDERING INFORMATION

Package Type	Part Number	
TO-220 SPQ:50pcs/Tube	T3	AM08N65T3R
		AM08N65T3VR
TO220F SPQ:50pcs /Tube	T3F	AM08N65T3FR
		AM08N65T3FVR
Note	V: Halogen free Package R: Tape & Tube	
AiT provides all RoHS products		

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

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

Parameter	Synbol	AM08N65T3	AM08N65T3F	Unit
Drain-to-Source Voltage (1)	V_{DSS}	650		V
Continuous Drain Current	I_D	8.0	8.0*	A
Continuous Drain Current	I_D@ 100℃	Fig 3		
Pulsed Drain Current, VGS@ 10V (2)	I_{DM}	Fig 6		
Power Dissipation	P_D	120	42	W
Derating Factor above 25 ◦C		0.96	0.34	W/ o C
Gate-to-Source Voltage	V_{GS}	± 30		V
Single Pulse Avalanche Energy L=10 mH	E_{AS}	450		mJ
Pulsed Avalanche Rating	I_{AS}	Fig 8		A
Peak Diode Recovery dv/dt (NOTE 3)	dv/dt	5.0		V/ns
Maximum Temperature for Soldering Leads at 0.063 in (1.6 mm) from Case for 10 seconds Package Body for 10 seconds	T_L T_{PKG}	300 260		◦ C
Operating Junction Temperature	T_J	-55 to 150		
Storage Temperature	T_{STG}	-55 to 150		

THERMAL RESISTANCE

Parameter	Symbol	Conditions	TO-220	TO-220F	Unit
Junction-to-Case	$R_{\theta JC}$	Drain lead soldered to water cooled heatsink, P_D adjusted for a peak junction temperature of +150 ◦ C.	1.04	2.98	◦ C/W
Junction-to-Ambient	$R_{\theta JA}$	1 cubic foot chamber, free air.	62	100	

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) TJ = +25 ◦C to +150 ◦C.

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

(3) ISD= 8 A, di/dt < 100 A/μs, VDD < BVDSS, TJ=+150 ◦ C.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	650			V
Breakdown Voltage Temperature Coefficient, Fig11.	$\triangle BVDSS/\triangle T_A$	Reference to 25 °C, I_D=250μA		0.50		V/ °C
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V			1.0	μA
		V_{DS}=520V, V_{GS}=0V T_A=125 °C			250	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS}=+30V			100	nA
Gate-to-Source Reverse Leakage		V_{GS}= -30V			-100	
ON CHARACTERISTICS						
Static Drain-to-Source On-Resistance Fig 9 and Fig 10.	$R_{DS(ON)}$	V_{GS}=10V, I_D=4.0A(4)		0.91	1.3	Ω
Gate Threshold Voltage, Fig 12.	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250uA	2.0		4.0	V
Forward Transconductance	gfs	V_{DS}=20V, I_D=10A(4)		10		S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V f =1.0MHz, Fig14		1240		pF
Output Capacitance	C_{oss}			110		
Reverse Transfer Capacitance	C_{rss}			14		
Total Gate Charge	Q_g	V_{DD}=325V, ID=8A, V_{GS} =10V, Fig 15		28		nC
Gate-to-Source Charge	Q_{gs}			5.6		
Gate-to-Drain (“Miller”) Charge	Q_{gd}			11.2		
RESISTIVE SWITCHING CHARACTERISTICS						
Turn-on Delay Time	td(ON)	V_{DD}=325V, I_D=8A, V_{GS}= 10V, R_G=9.1 Ω		13		nS
Rise Time	trise			15		
Turn-Off Delay Time	td(OFF)			40		
Fall Time	tfall			22		
SOURCE-DRAIN DIODE CHARACTERISTICS						
Continuous Source Current (Body Diode)	I_S	Integrate PN-diode in MOSFET			10	A
Maximum Pulsed Current (Body Diode)	I_{SM}				40	
Diode Forward Voltage	V_{SD}	I_S=8A, V_{GS}=0V			1.5	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V,V_{DD}=60V I_F=8A, di/dt=100 A/μs		200		ns
Reverse Recovery Charge	Q_{rr}			2.2		uC

Notes:

(4) TJ = +25 °C to +150 °C.

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

(6) ISD= 8 A, di/dt < 100 A/μs, VDD < BVDSS, TJ=+150 °C.

(7) Pulse width < 380μs; duty cycle < 2%.

TYPICAL PERFORMANCE CHARACTERISTICS

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

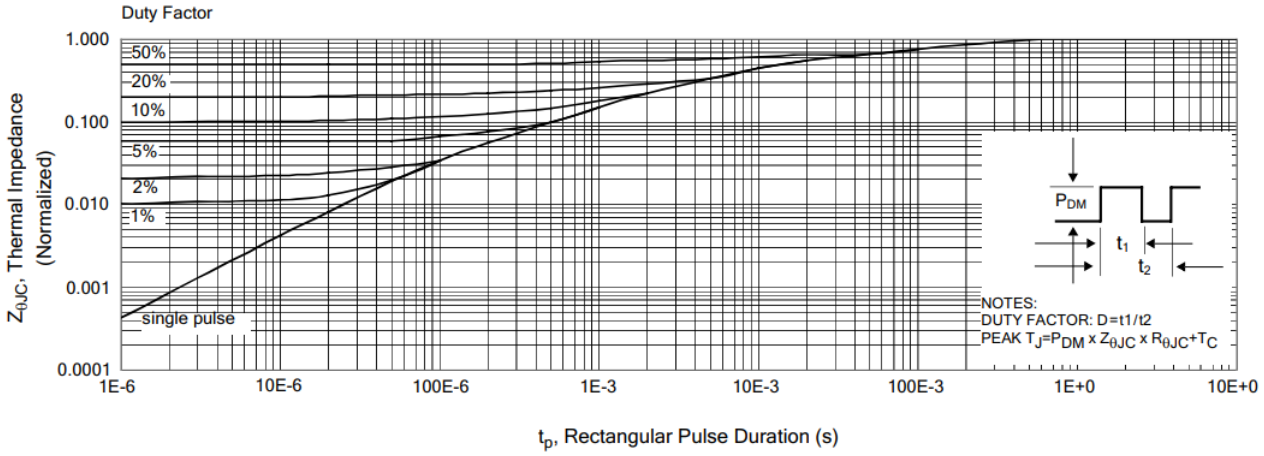


Fig 2. Maximum Power Dissipation vs case Temperature

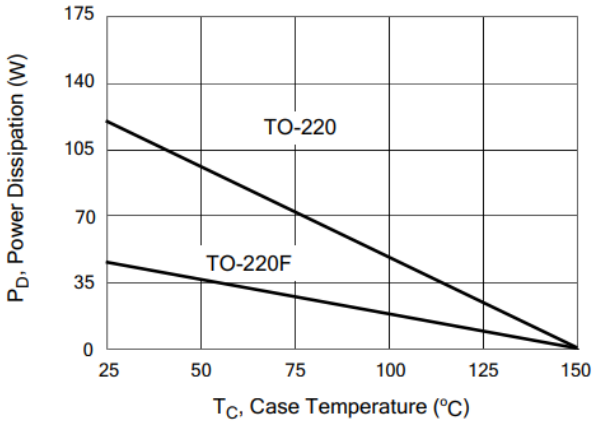


Fig 3. Maximum Continuous Drain Current vs Case Temperature

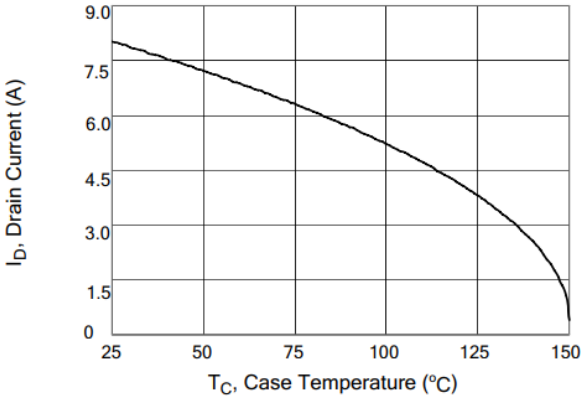


Fig 4. Typical Output Characteristics

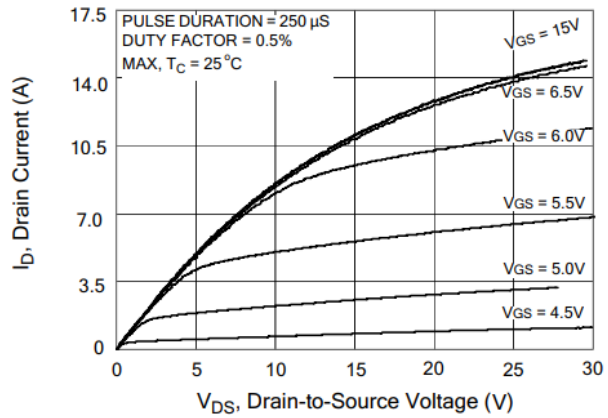


Fig 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current

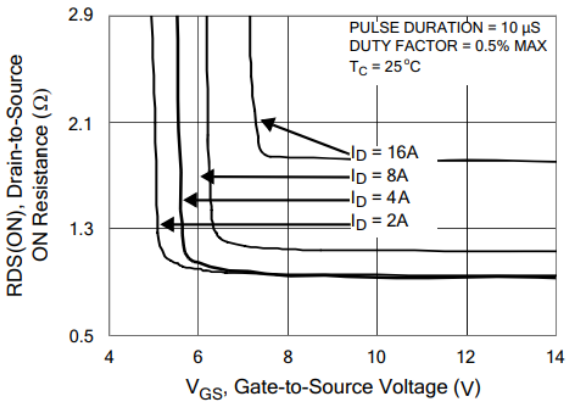


Fig 6. Maximum Peak Current Capability

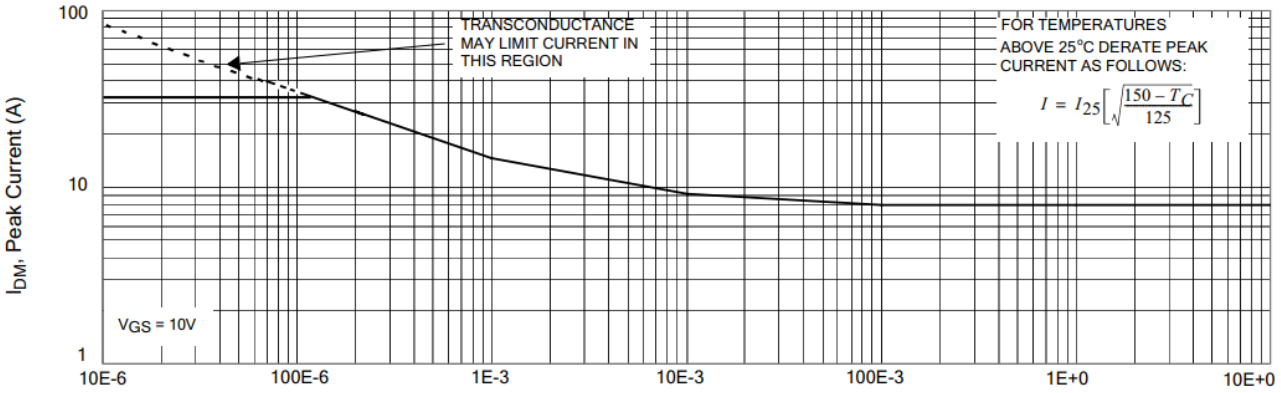


Fig 7. Typical Transfer Characteristics

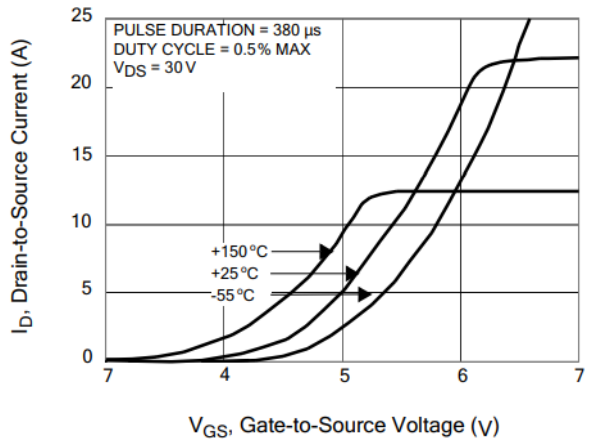


Fig 8. Unclamped Inductive Switching Capability

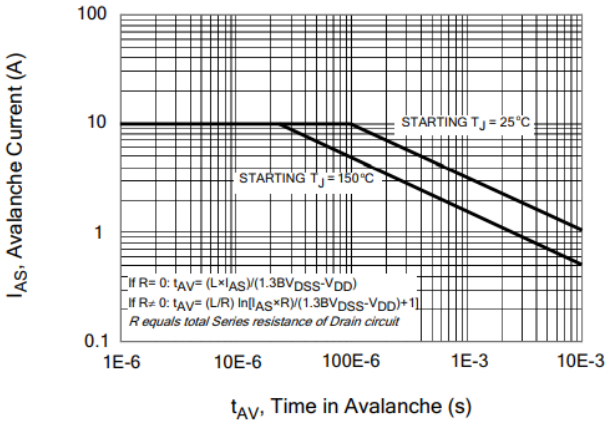


Fig 9. Typical Drain-to-Source ON Resistance vs Drain Current

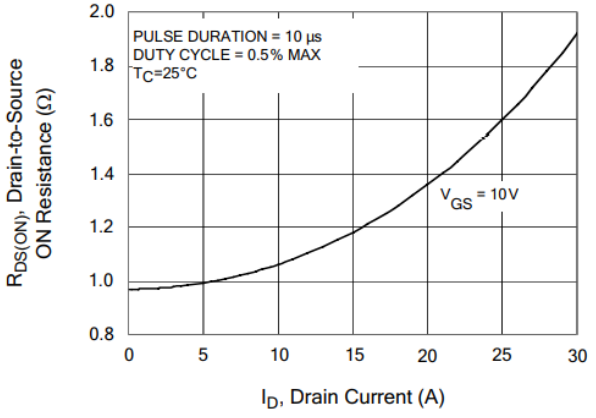


Fig 10. Typical Drain-to-Source ON Resistance vs Junction Temperature

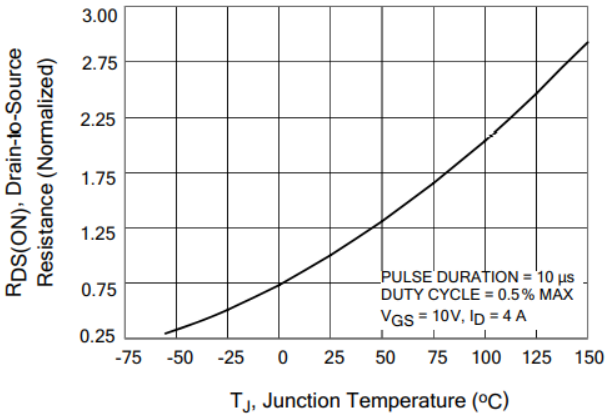


Fig11. Typical Breakdown Voltage vs Junction Temperature

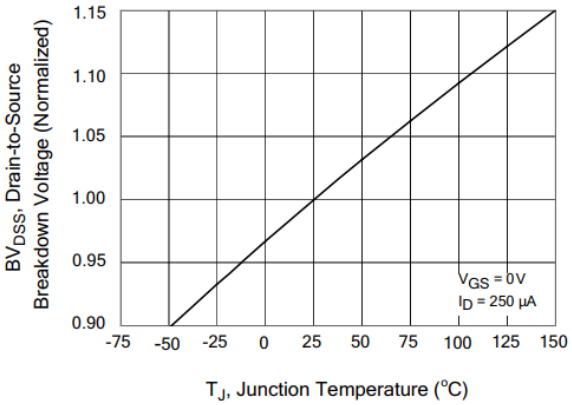


Fig 12. Typical Threshold Voltage vs Junction Temperature

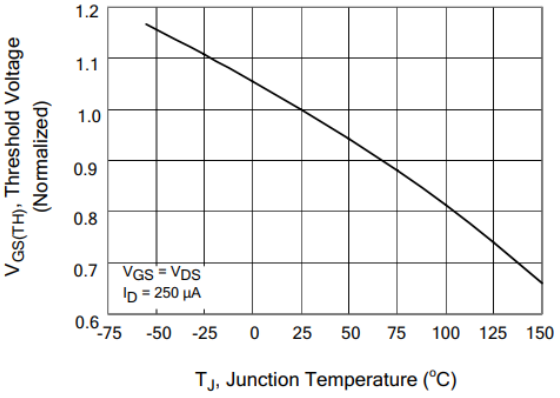


Fig 13. Maximum Forward Bias Safe Operating Area

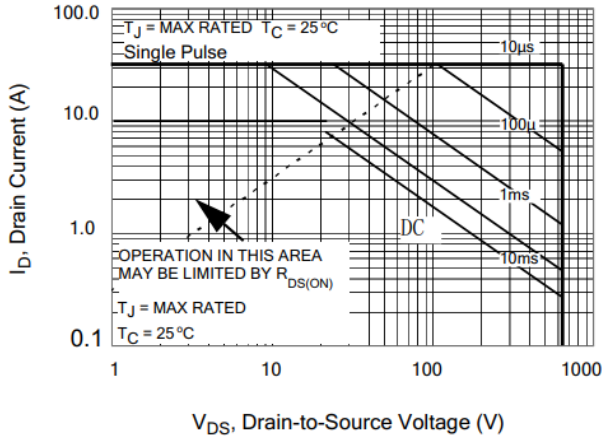


Fig 14. Typical Capacitance vs Drain-to-Source Voltage

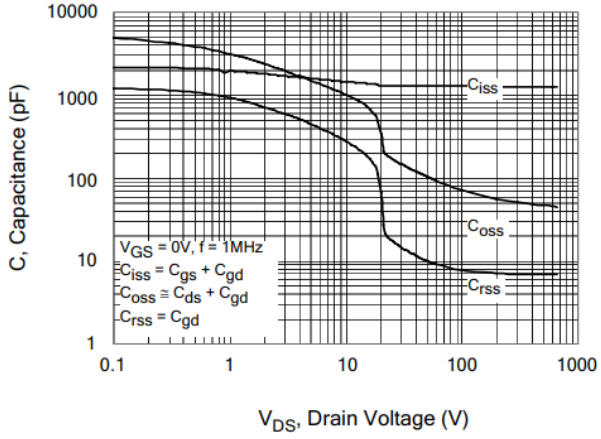


Fig 15. Typical Gate Charge vs Gate-to-Source Voltage

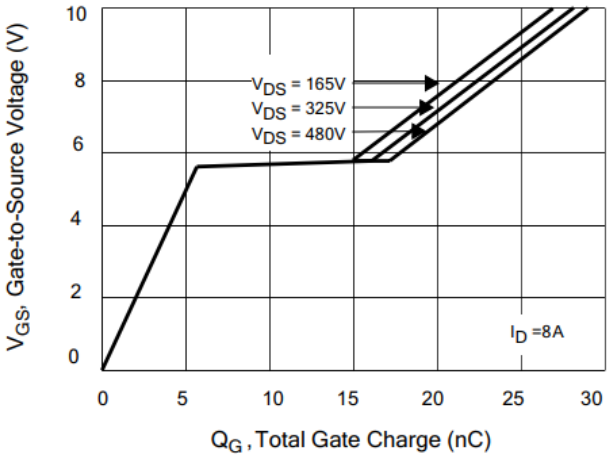
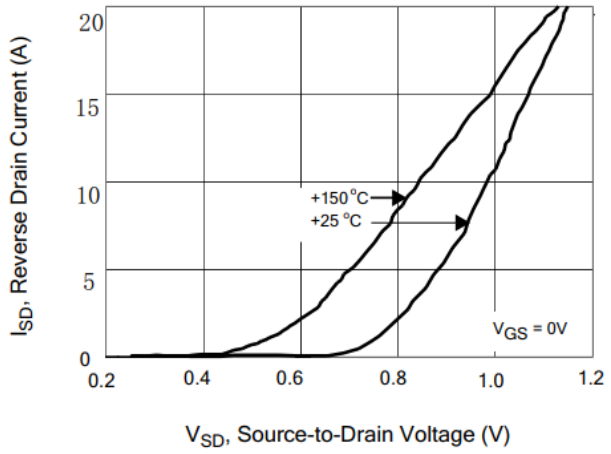


Fig 16. Typical Body Diode Transfer Characteristics



TEST CIRCUITS AND WAVEFORMS

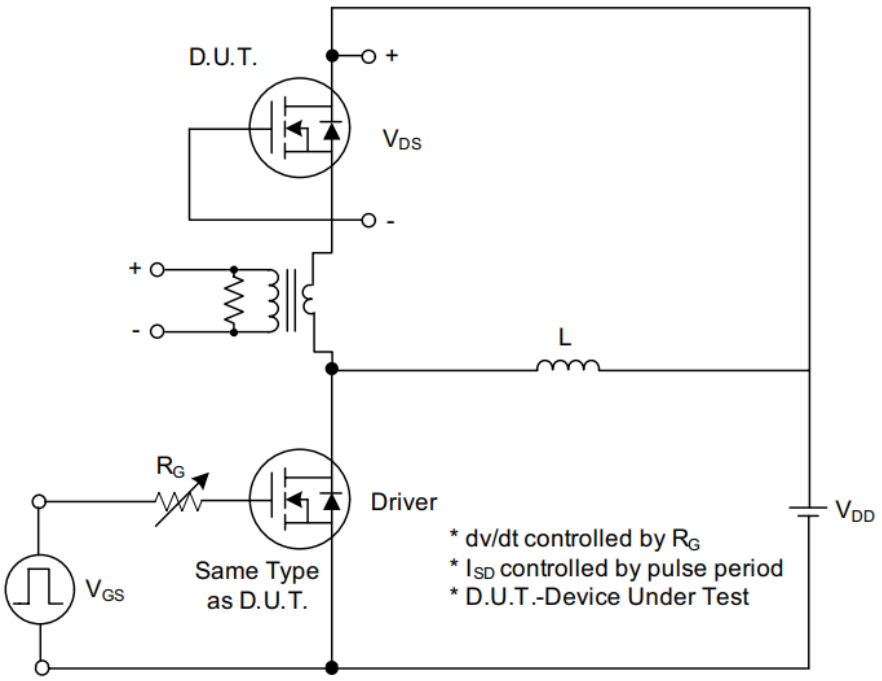


Fig 17. Peak Diode Recovery dv/dt Test Circuit

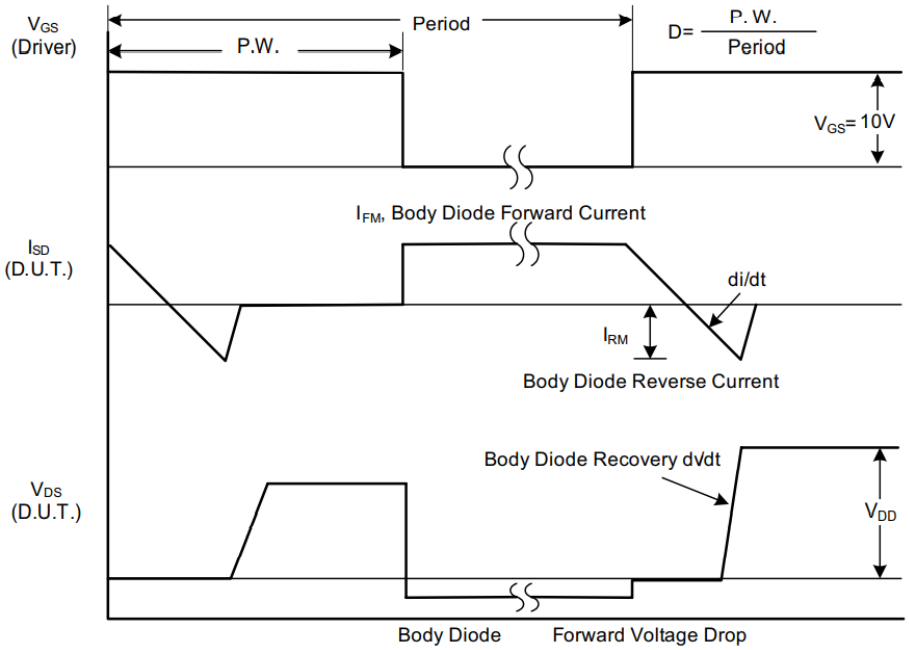


Fig 18. Peak Diode Recovery dv/dt Waveforms

Fig 19. Switching Test Circuit

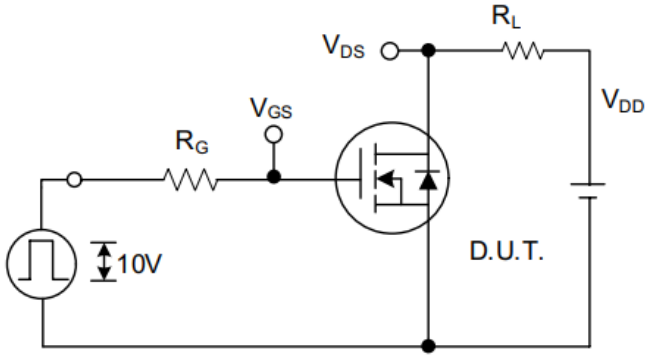


Fig 20.. Switching Waveforms

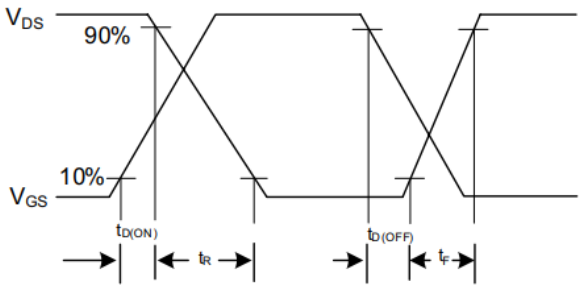


Fig 21. Gate Charge Test Circuit

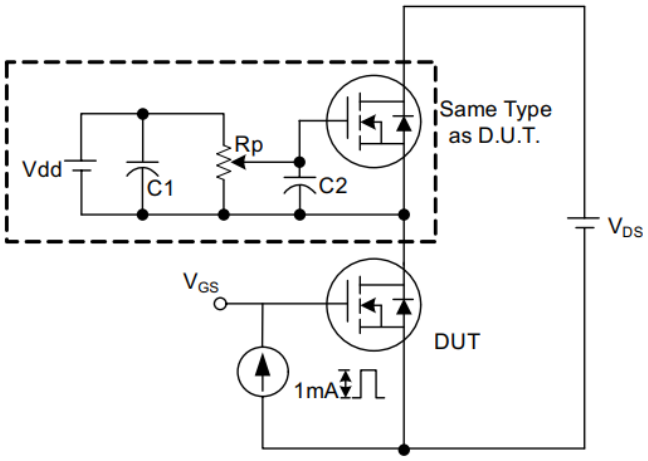


Fig 22. Gate Charge Waveform

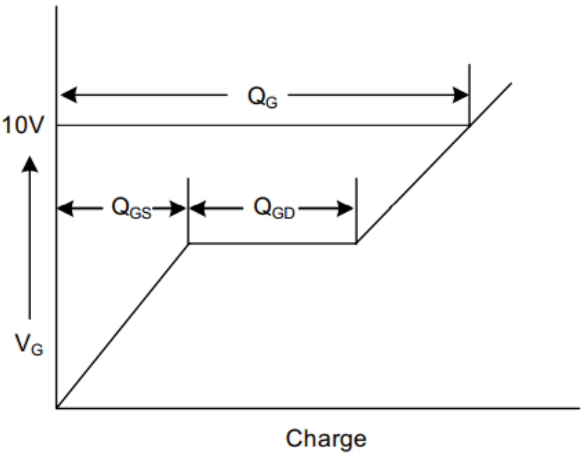


Fig 23. Unclamped Inductive Switching Test Circuit

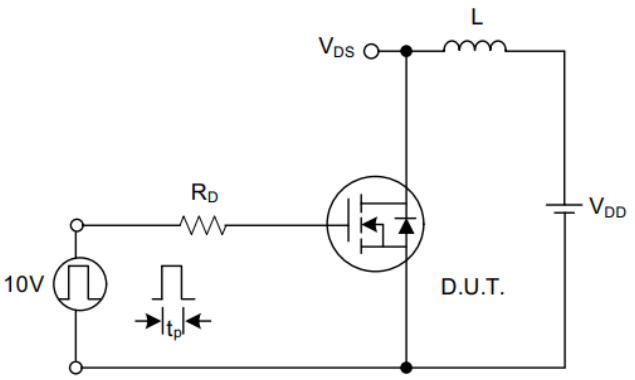
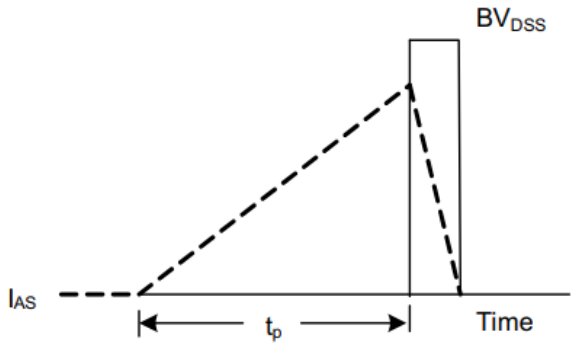
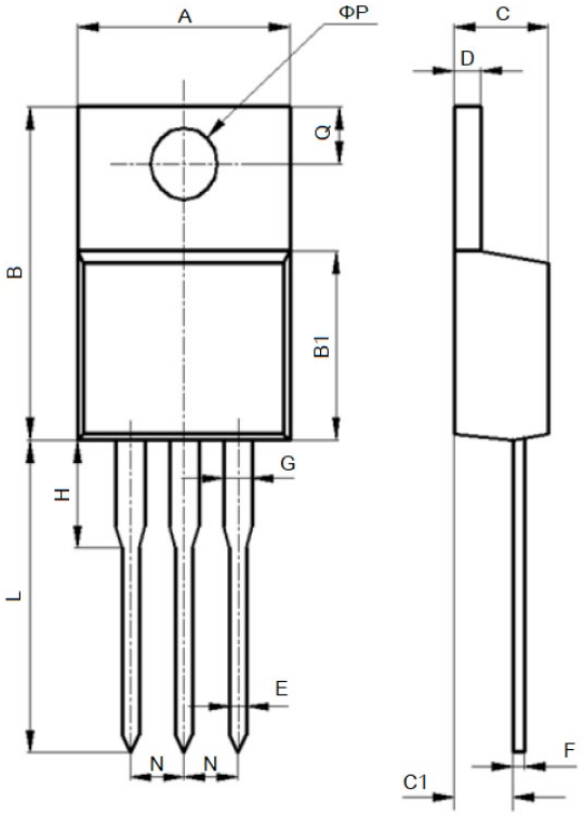


Fig 24. Unclamped Inductive Switching Waveforms



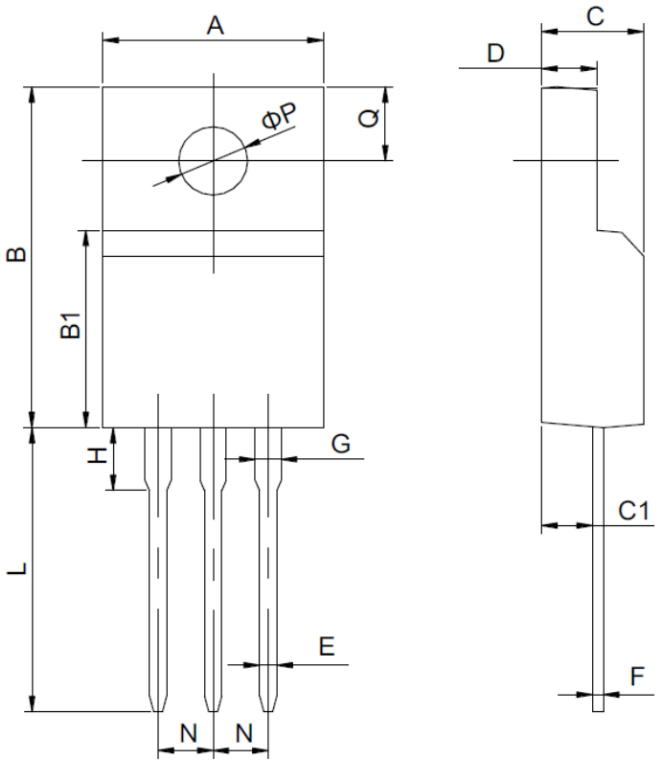
PACKAGE INFORMATION

Dimension in TO-220 (Unit: mm)



Symbol	Min.	Max.
A	10.1	10.5
B	15.2	15.6
B1	9.00	9.40
C	4.40	4.60
C1	2.40	3.00
D	1.20	1.40
E	0.70	0.90
F	0.40	0.60
G	1.17	1.37
H	3.30	3.80
L	13.1	13.7
N	2.34	2.74
Q	2.40	3.00
ΦP	3.70	3.90

Dimension in TO-220F (Unit: mm)



Symbol	Min.	Max.
A	9.70	10.30
B	15.50	16.10
B1	8.99	9.39
C	4.40	4.80
C1	2.15	2.55
D	2.50	2.90
E	0.70	0.90
F	0.40	0.60
G	1.12	1.42
H	3.40	3.80
L	12.6	13.6
N	2.34	2.74
Q	3.15	3.55
ΦP	3.00	3.30

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