

N-Channel MOSFET

Lead Free Package and Finish

Applications:

- Adaptor
- Charger
- SMPS

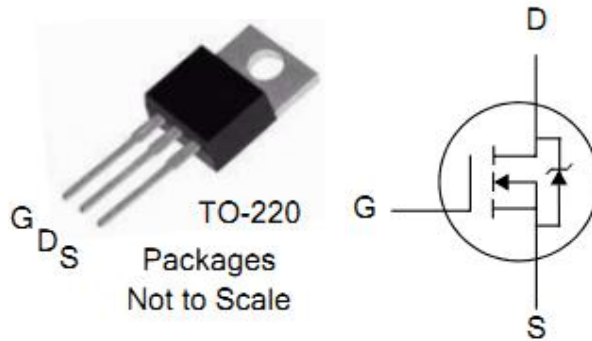
V_{DSS}	$R_{DS(ON)}(Typ.)$	I_D
100V	7.3m Ω	120A

Features:

- RoHS Compliant
- Low ON Resistance
- Low Gate Charge
- Peak Current vs Pulse Width Curve
- Inductive Switching Curves

Ordering Information

PART NUMBER	PACKAGE	BRAND
FTP09N10N	TO-220	IPS



Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	FTP09N10N	Units
V_{DSS}	Drain-to-Source Voltage	100	V
I_D	Continuous Drain Current	120	A
I_{DM}	Pulsed Drain Current (NOTE *1)	480	A
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy	605	mJ
P_D	Power Dissipation	198	W
	Derating Factor above 25°C	1.59	W/ $^\circ\text{C}$
T_L	Maximum Temperature for Soldering	300	$^\circ\text{C}$
T_J and T_{STG}	Operating Junction and Storage Temperature Range	150, -55 to 150	

Thermal Resistance

Symbol	Parameter	Max.	Units	Test Conditions
$R_{\theta JC}$	Junction-to-Case	0.63	$^\circ\text{C}/\text{W}$	Water cooled heatsink, P_D adjusted for a peak junction temperature of $+150^\circ\text{C}$.
$R_{\theta JA}$	Junction-to-Ambient	62.5		1 cubic foot chamber, free air.



FTP09N10N

OFF Characteristics $T_C=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	100	--	--	V	$V_{GS}=0V, I_D=250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	--	--	1	μA	$V_{DS}=100V, V_{GS}=0V$ $T_J=25^\circ\text{C}$
		--	--	100		$V_{DS}=80V, V_{GS}=0V$ $T_J=100^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	--	--	+100	nA	$V_{GS}=+20V$
	Gate-to-Source Reverse Leakage	--	--	-100		$V_{GS}=-20V$

ON Characteristics $T_J=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	7.3	9.5	m Ω	$V_{GS}=10V, I_D=60A$
$V_{GS(TH)}$	Gate Threshold Voltage	2	--	4	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$						

Notes:

*1. Repetitive rating; pulse width limited by maximum junction temperature.

*2: $L=0.5mH, I_D=49A, \text{Start } T_J=25^\circ\text{C}$

Test Circuits and Waveforms

Figure 14. Gate Charge Test Circuit

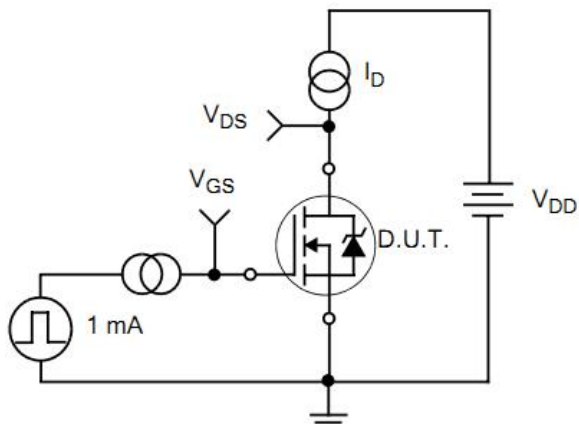


Figure 15. Gate Charge Waveforms

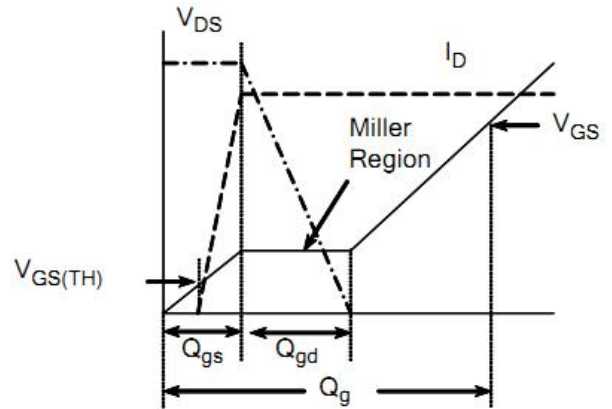


Figure 16. Resistive Switching Test Circuit

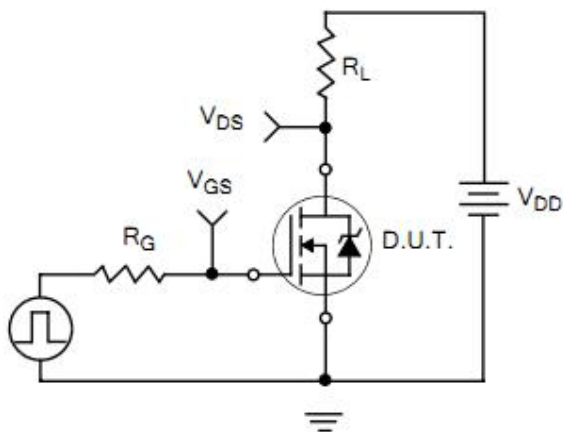


Figure 17. Resistive Switching Waveforms

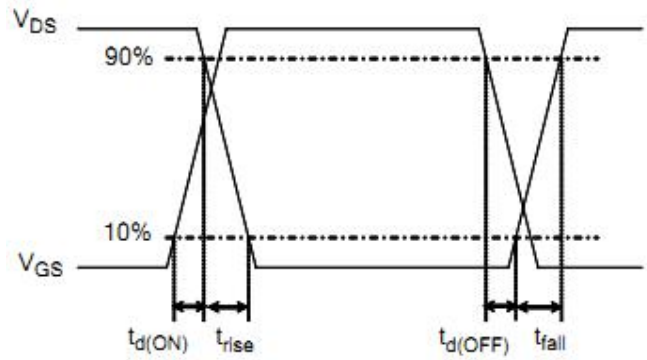


Figure 18. Diode Reverse Recovery Test Circuit

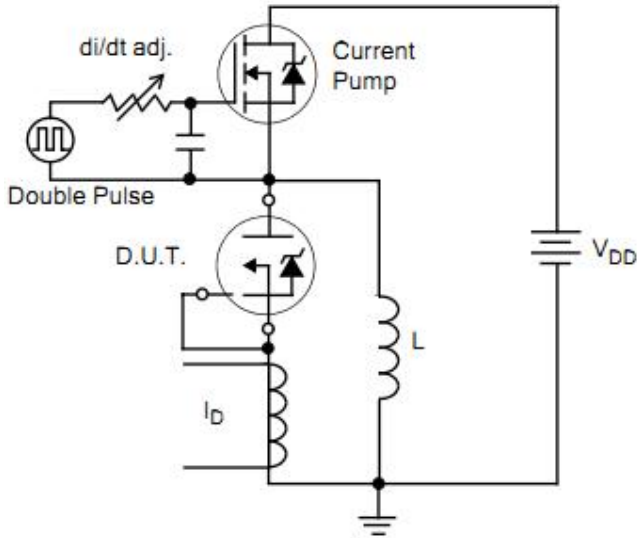


Figure 19. Diode Reverse Recovery Waveform

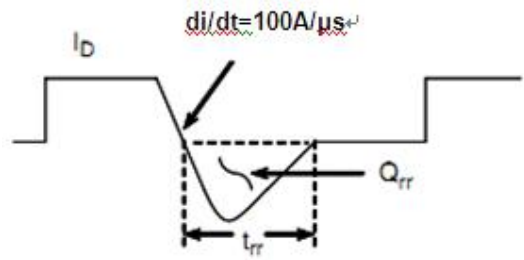


Figure20.Unclamped Inductive Switching Test Circuit

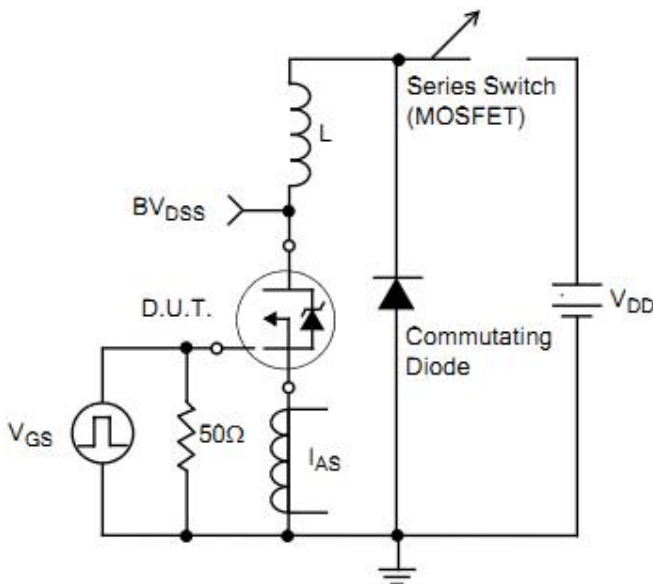
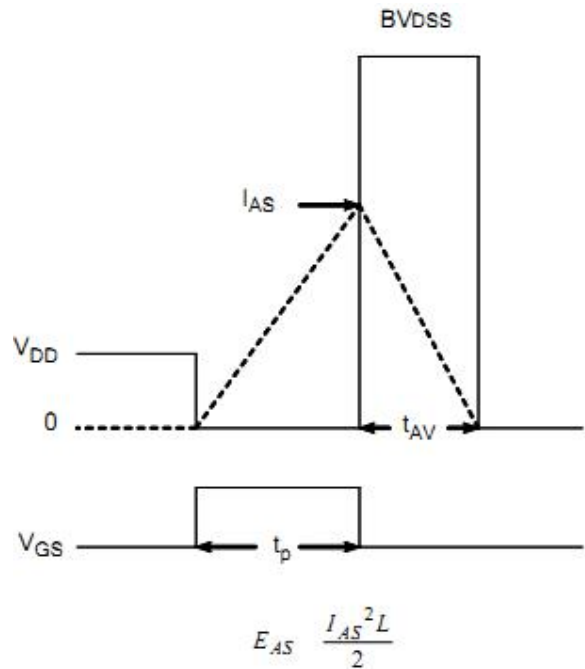


Figure21.Unclamped Inductive Switching Waveform





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