

General Features

- Advanced Planar Process
- $R_{DS(ON),typ.}=0.26\Omega @ V_{GS}=10V$
- Low Gate Charge Minimize Switching Loss
- Rugged Poly silicon Gate Structure

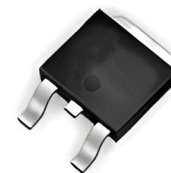
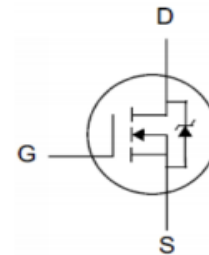
Applications

- BLDC Motor Driver
- Electric Welder
- High Efficiency SMPS

Product Description

BV_{DSS}	200	V
I_D	9	A
$R_{DS(ON),Typ.}$	0.26	Ω

Package



TO-252

Absolute Maximum Ratings $T_j=25^{\circ}\text{C}$

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-to-Source Voltage	200	V
V_{GSS}	Gate-to-Source Voltage	± 20	
I_D	Continuous Drain Current	9	A
I_{DM}	Pulsed Drain Current at $V_{GS}=10V$	36	
P_D	Power Dissipation	83	W
E_{AS}	Single Pulse Avalanche Energy	135	mJ
T_L T_{PAK}	Maximum Temperature for Soldering Leads at 0.063in (1.6mm) from Case for 10 seconds, Package Body for 10 seconds	300 260	$^{\circ}\text{C}$
$T_J \& T_{STG}$	Operating and Storage Temperature Range	-55 to 150	

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.5	$^{\circ}\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	$^{\circ}\text{C/W}$

Electrical Characteristics $T_J = 25^{\circ}\text{C}$

OFF Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
BV_{DSS}	Drain-to-Source Breakdown Voltage	200	-	-	V	$V_{GS}=0V, I_D=250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	-	-	1	μA	$V_{DS}=200V, V_{GS}=0V$
		-	-	100		$V_{DS}=160V, V_{GS}=0V, T_J=125^{\circ}\text{C}$
I_{GSS}	Gate-to-Source Leakage Current	-	-	+300	nA	$V_{GS}=+20V, V_{DS}=0V$
		-	-	-300		$V_{GS}=-20V, V_{DS}=0V$

ON Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	-	0.26	0.36	Ω	$V_{GS}=10V, I_D=2.5A$
$V_{GS(TH)}$	Gate Threshold Voltage	0.5	-	1.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$

Dynamic Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
C_{iss}	Input Capacitance	-	724	-	pF	$V_{GS}=0V$, $V_{DS}=25V$, $f=1.0MHz$
C_{rss}	Reverse Transfer Capacitance	-	14	-		
C_{oss}	Output Capacitance	-	75	-		
Q_g	Total Gate Charge	-	15	-	nC	$V_{DD}=160V$, $I_D=9A$, $V_{GS}=0$ to $10V$
Q_{gs}	Gate-to-Source Charge	-	1.5	-		
Q_{gd}	Gate-to-Drain (Miller) Charge	-	4.6	-		

Resistive Switching Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$t_{d(ON)}$	Turn-on Delay Time	-	10	-	nS	$V_{DD}=100V$, $I_D=9A$, $V_{GS}=10V$ $R_g=10\Omega$
t_{rise}	Rise Time	-	5	-		
$t_{d(OFF)}$	Turn-Off Delay Time	-	28	-		
t_{fall}	Fall Time	-	5	-		

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Typical Characteristics(Cont.)

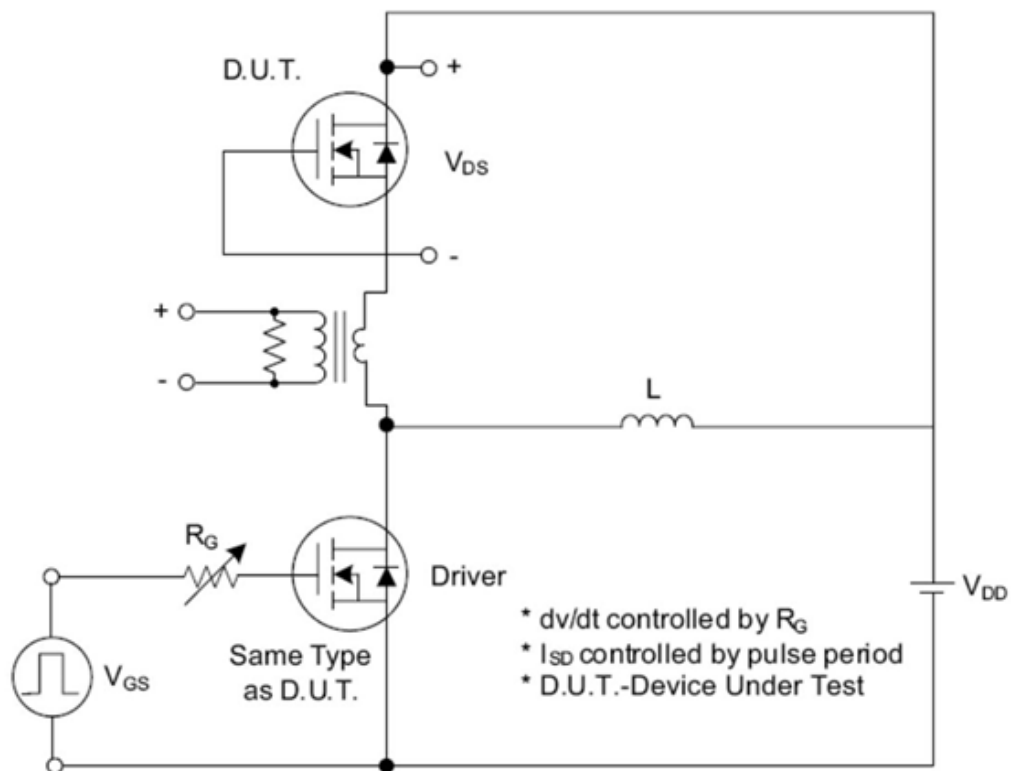


Fig. 1.1 Peak Diode Recovery dv/dt Test Circuit

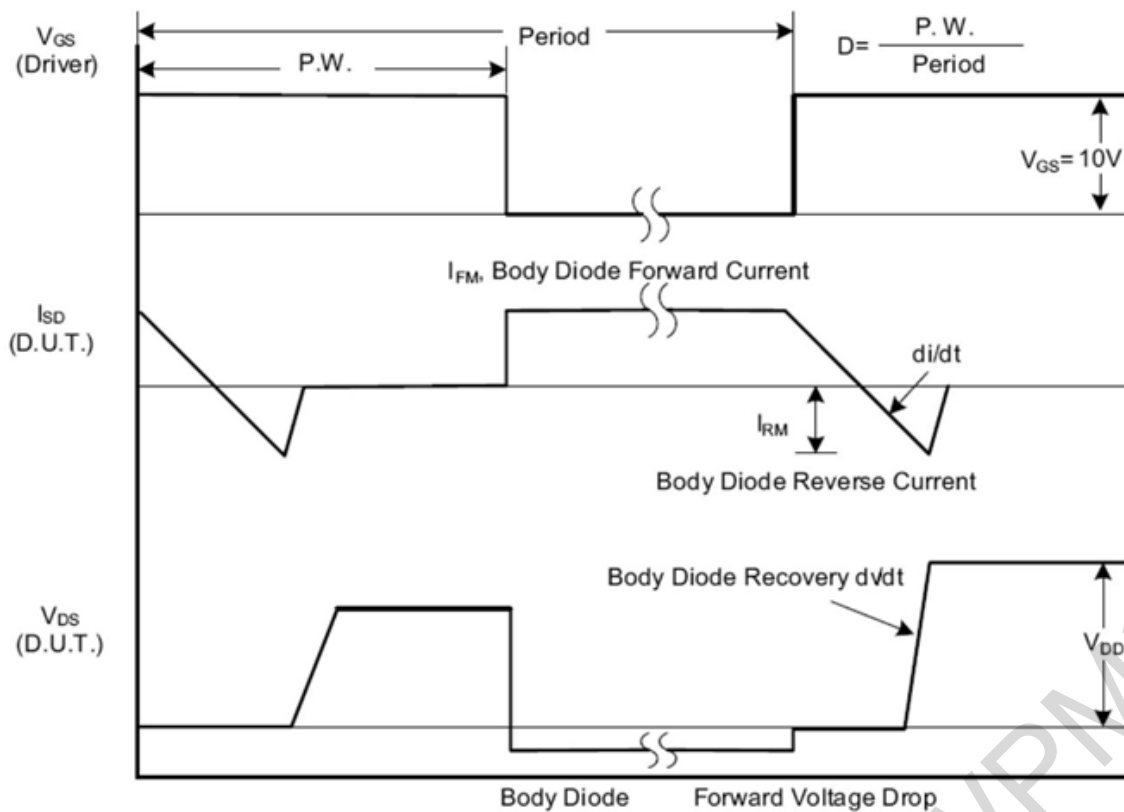


Fig. 1.2 Peak Diode Recovery dv/dt Waveforms

Test Circuits and Waveforms (Cont.)

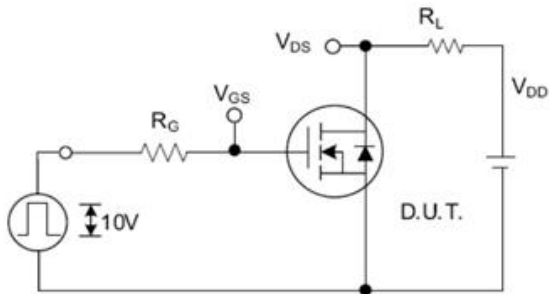


Fig. 2.1 Switching Test Circuit

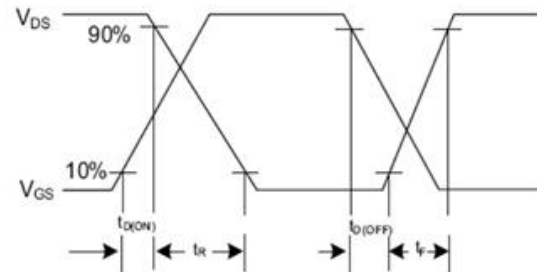


Fig. 2.2 Switching Waveforms

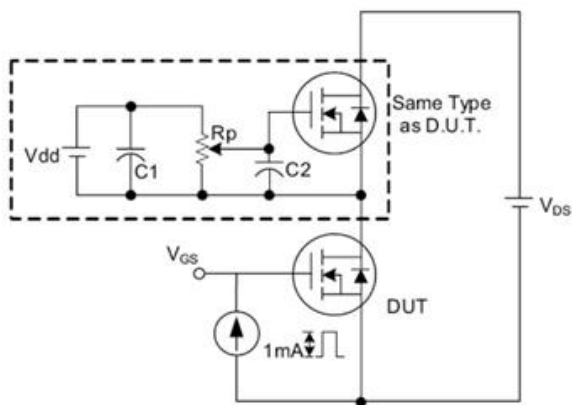


Fig. 3.1 Gate Charge Test Circuit

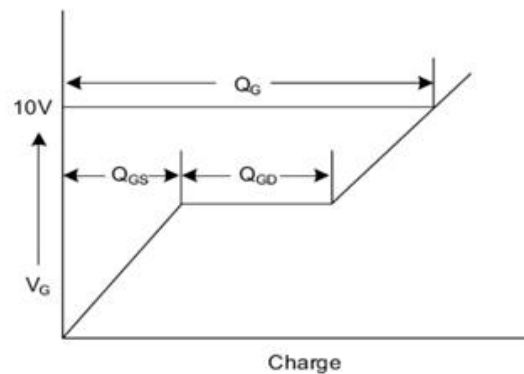


Fig. 3.2 Gate Charge Waveform

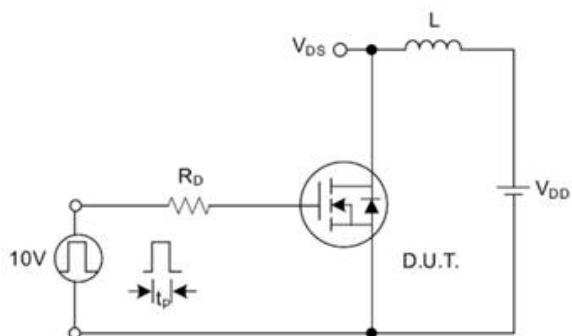


Fig. 4.1 Unclamped Inductive Switching Test Circuit

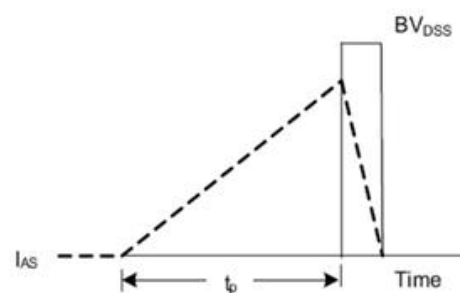


Fig. 4.2 Unclamped Inductive Switching Waveforms