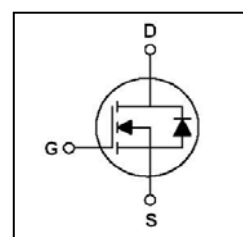
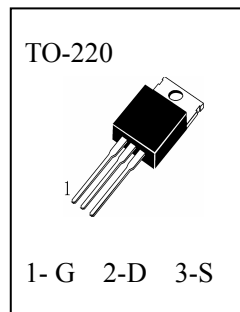


**N-Channel Enhancement Mode Field Effect Transistor****Applications**

- Servo motor control.
- Power MOSFET gate drivers.
- DC/DC converters
- Other switching applications.

Features

- 15A, 60V(See Note), $R_{DS(on)} < 100mV\Omega @ V_{GS} = 5V$
- Fast switching
- 100% avalanche tested
- Minimize input capacitance and gate charge
- Exceptional dv/dt capability

**Maximum Ratings** ($T_a=25^{\circ}C$ unless otherwise specified)

T_{stg}	Storage Temperature	-----	$-55\sim 150^{\circ}C$
T_j	Operating Junction Temperature	-----	$150^{\circ}C$
V_{DSS}	Drain-Source Voltage	-----	60V
V_{GSS}	Gate-Source Voltage	-----	$\pm 15V$
I_D	Drain Current (Continuous)($T_c=25^{\circ}C$)	-----	15A
I_{DM}	Pulsed Drain Current (Note 1)	-----	60A
P_D	Maximum Power Dissipation ($T_c=25^{\circ}C$)	-----	60W
E_{AS}	Pulsed Avalanche Energy (Note 2)	-----	50mJ

Thermal Characteristics

Symbol	Items	TO-220	Unit
Rthj-case	Thermal Resistance Junction-case	Max 4.38	$^{\circ}C/W$
Rthj-amb	Thermal Resistance Junction-ambient	Max 58	$^{\circ}C/W$

**Electrical Characteristics** (Ta=25℃ unless otherwise specified)

Symbol	Items	Min.	Typ.	Max.	Unit	Conditions
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	60			V	I _D =250μA, V _{GS} =0V
I _{DSS}	Zero Gate Voltage Drain Current			250	μA	V _{DS} =60V, V _{GS} =0V
I _{GSS}	Gate – Body Leakage			±100	nA	V _{GS} =±15V, V _{DS} =0V
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	1.0	1.75	2.5	V	V _{DS} =V _{GS} , I _D =250μA
R _{DS(on)}	Static Drain-Source On-Resistance			100	mΩ	V _{GS} =5V, I _D =7.5A (Note 3)
Dynamic Characteristics and Switching Characteristics						
C _{iss}	Input Capacitance		700	950	pF	V _{DS} =25V, V _{GS} =0V, f=1.0 MHz
C _{oss}	Output Capacitance		230	310	pF	
C _{rss}	Reverse Transfer Capacitance		80	110	pF	
t _{d(on)}	Turn - On Delay Time		15	60	nS	V _{DS} =30V, V _{GS} =5V, I _D =7.5A, R _G =4.7 Ω (Note 3)
t _r	Rise Time		160	200	nS	
t _{d(off)}	Turn - Off Delay Time		52	80	nS	
t _f	Fall Time		100	140	nS	V _{DS} =40V, I _D =15A, V _{GS} =5V (Note 3)
Q _g	Total Gate Charge		18	30	nC	
Q _{gs}	Gate–Source Charge		8		nC	
Q _{gd}	Gate–Drain Charge		9		nC	
Drain-Source Diode Characteristics and Maximun Ratings						
I _S	Continuous Source–Drain Diode Forward Current			15	A	
I _{SM}	Pulsed Drain-Source Diode Forward Current			60	A	
V _{SD}	Source–Drain Diode Forward On–Voltage			1.5	V	I _S =15A, V _{GS} =0V (Note 3)

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition: T_j=25℃, V_{DD}=25V, I_D=15A, L=0.5mH
3. Pulse Test: Pulse width≤300μS, Duty Cycle≤1.5%



Typical Characteristics

TEST CIRCUITS AND WAVEFORMS

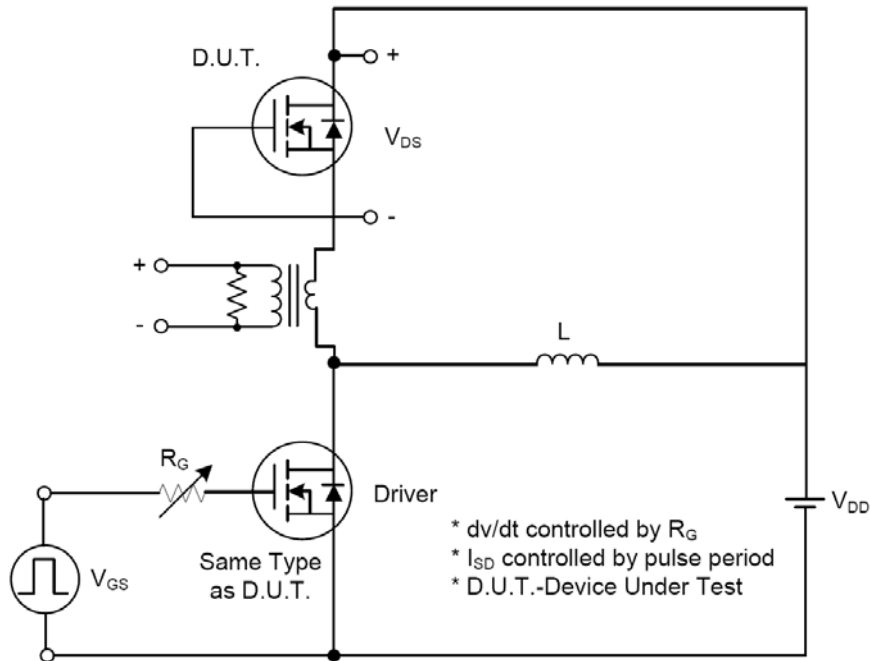


Fig. 1A Peak Diode Recovery dv/dt Test Circuit

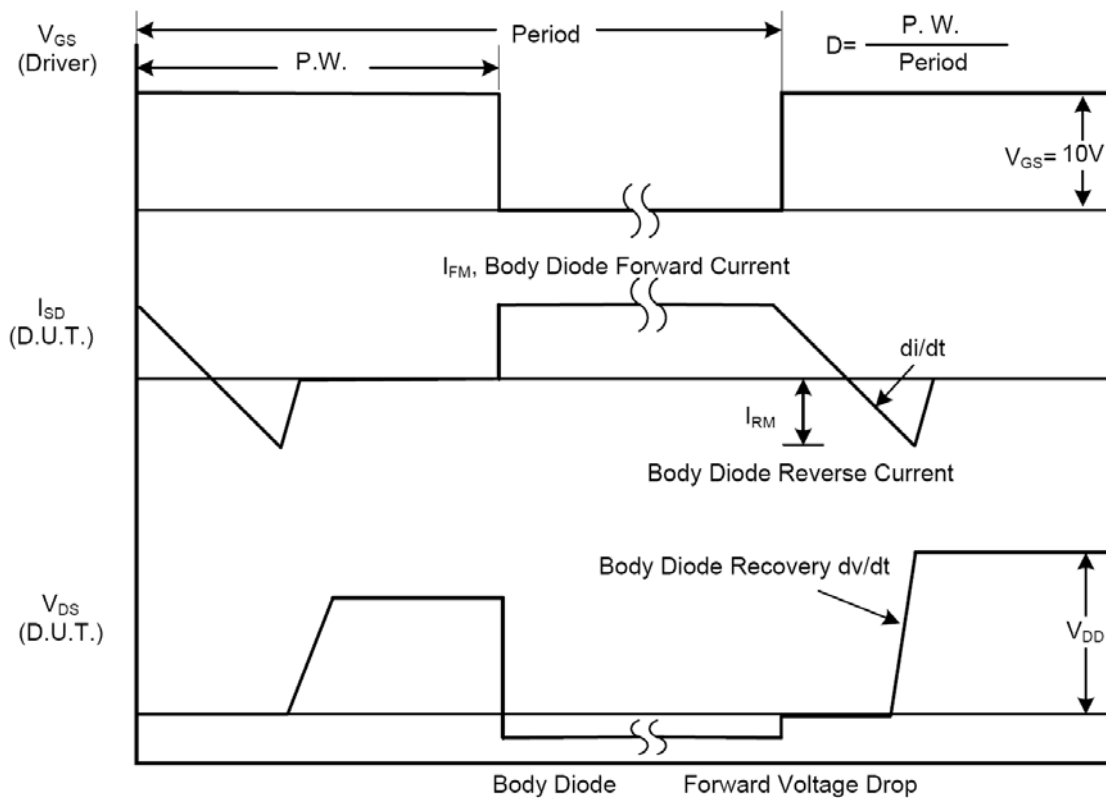


Fig. 1B Peak Diode Recovery dv/dt Waveforms



Typical Characteristics

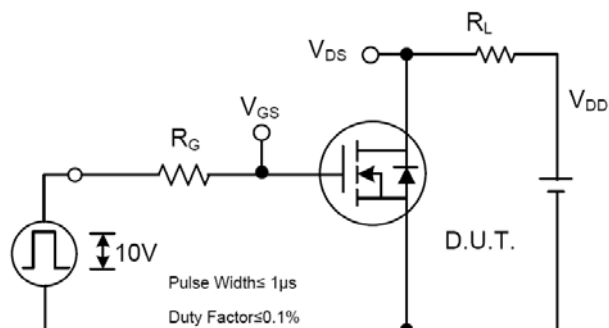


Fig. 2A Switching Test Circuit

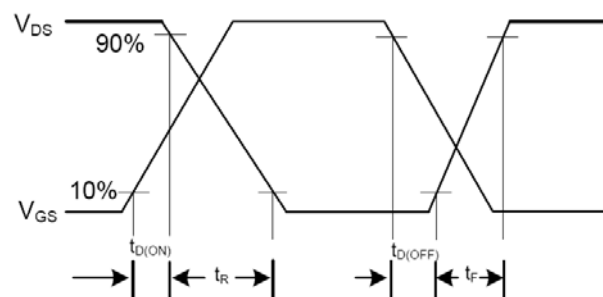


Fig. 2B Switching Waveforms

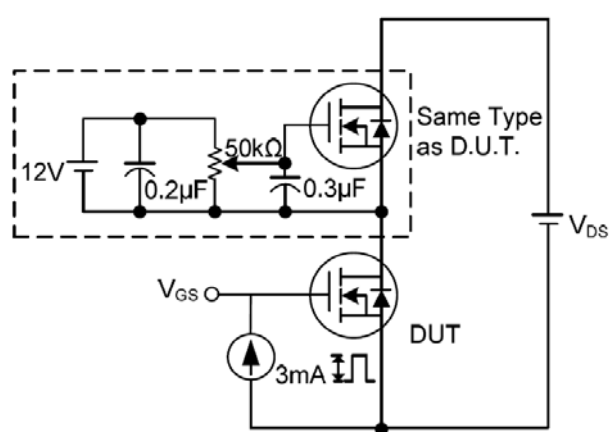


Fig. 3A Gate Charge Test Circuit

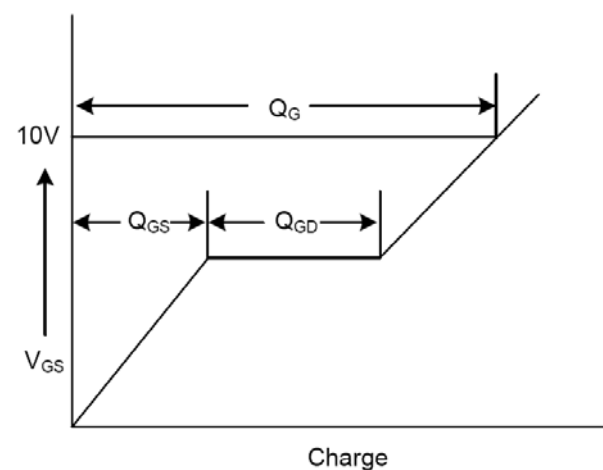


Fig. 3B Gate Charge Waveform

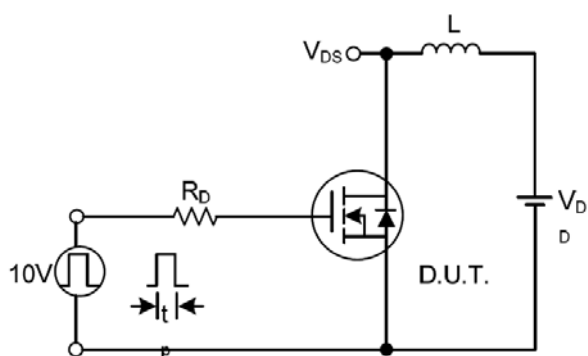


Fig. 4A Unclamped Inductive Switching Test Circuit

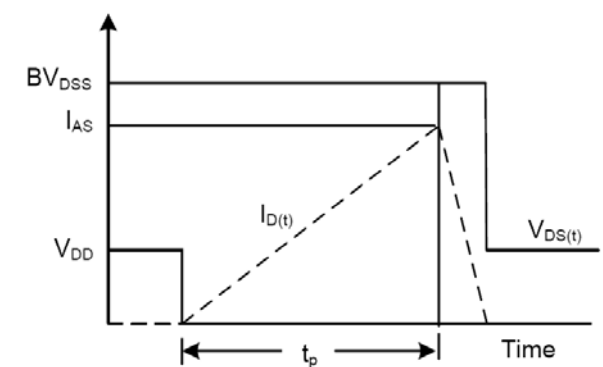


Fig. 4B Unclamped Inductive Switching Waveforms



Typical Characteristics

