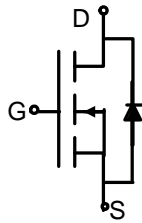


FH30150B
N-Channel Trench Power MOSFET
Features

- 30V,150A
- $R_{DS(ON)}=1.8m\Omega$ (Typ.) @ $V_{GS}=10V$
- $R_{DS(ON)}=2.4m\Omega$ (Typ.) @ $V_{GS}=4.5V$
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge

Application

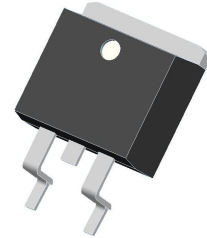
- Load Switch
- PWM Application
- Power management



Schematic diagram

TO-263


Marking and pin assignment



TO-263 top view

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

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	150
		$T_C = 100^\circ\text{C}$	105
I_{DM}	Pulsed Drain Current ^{note1}	600	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	180	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	150
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.0	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175	$^\circ\text{C}$

Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	uA
		$V_{DS}=24V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	10	
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=30A$	-	1.8	2.6	m Ω
		$V_{GS}=4.5V, I_D=25A$	-	2.4	3.4	
g_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=15A$	-	48	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1.0\text{MHz}$	-	4800	-	pF
C_{oss}	Output Capacitance		-	735	-	pF
C_{rSS}	Reverse Transfer Capacitance		-	420	-	pF
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=24A, V_{GS}=4.5V$	-	40	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	19	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V, I_D=1A, R_{GEN}=1\Omega, V_{GS}=10V$	-	20	-	ns
t_r	Turn-on Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	75	-	ns
t_f	Turn-off Fall Time		-	28	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	150	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	600	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A$	-	-	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	$I_S=1A, dI/dt=100A/\mu s$	-	49	85	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	18	35	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J=25^\circ\text{C}, V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=60A, R_G=25\Omega$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

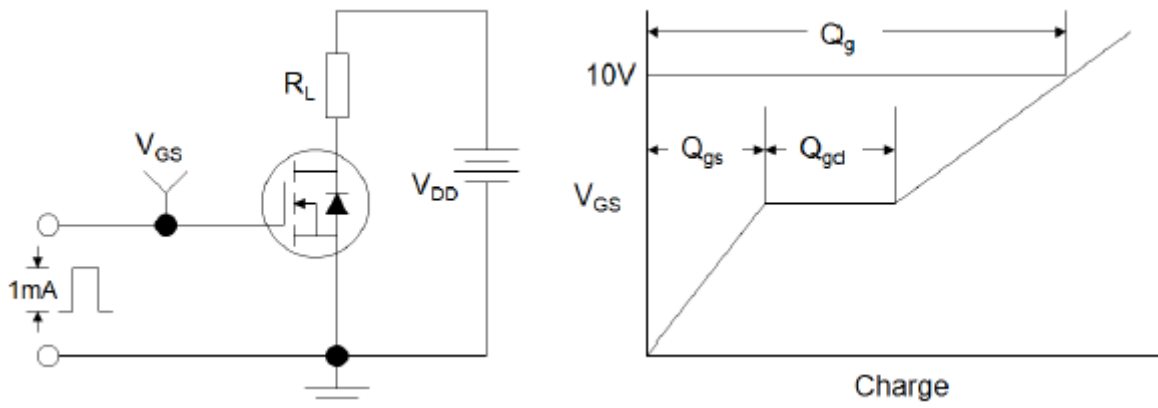


Figure1:Gate Charge Test Circuit & Waveform

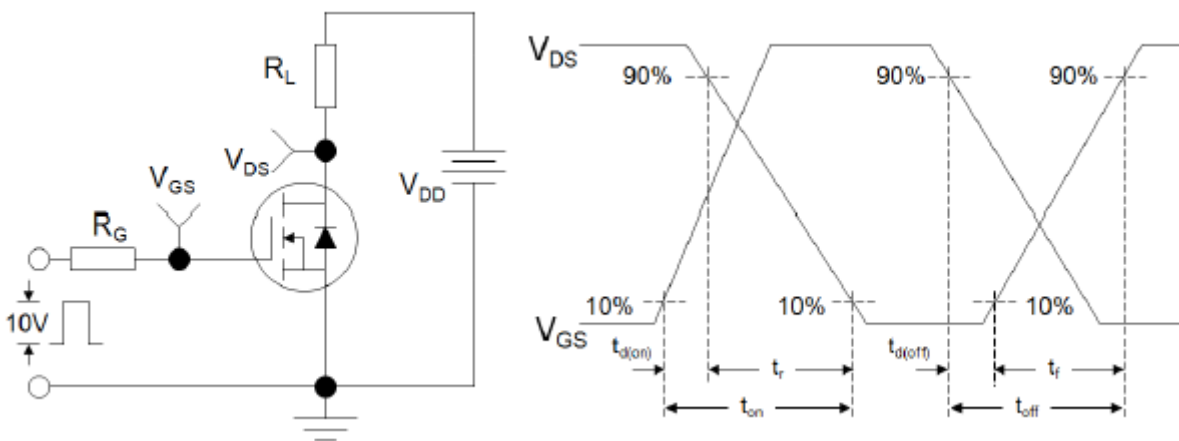


Figure 2: Resistive Switching Test Circuit & Waveforms

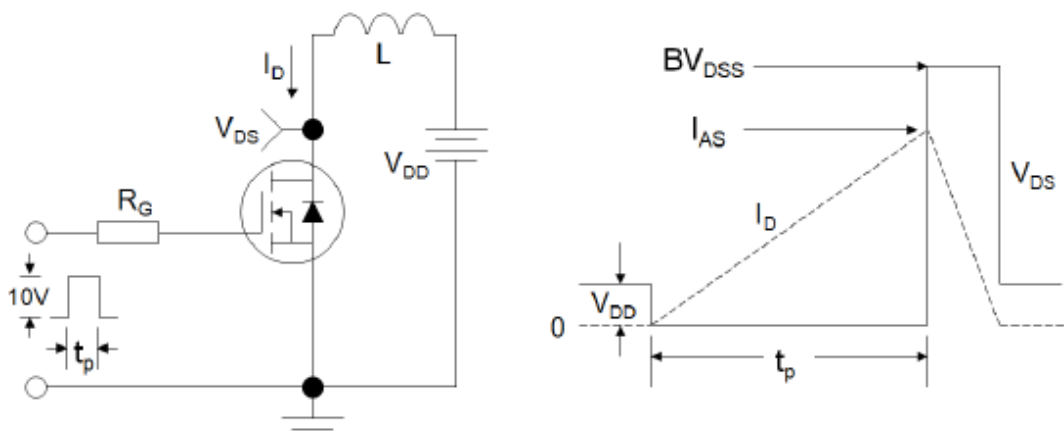


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

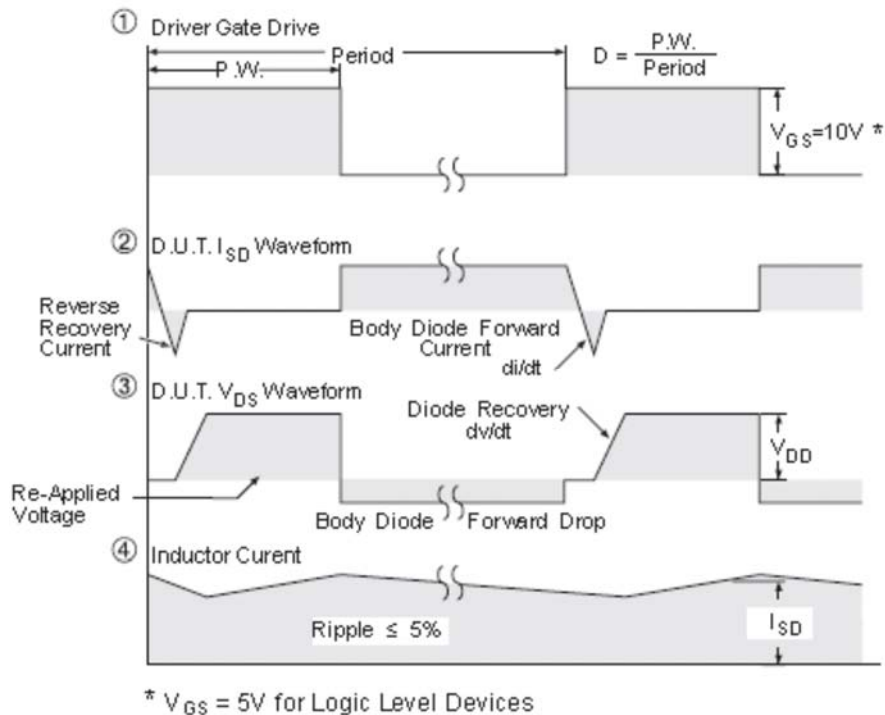
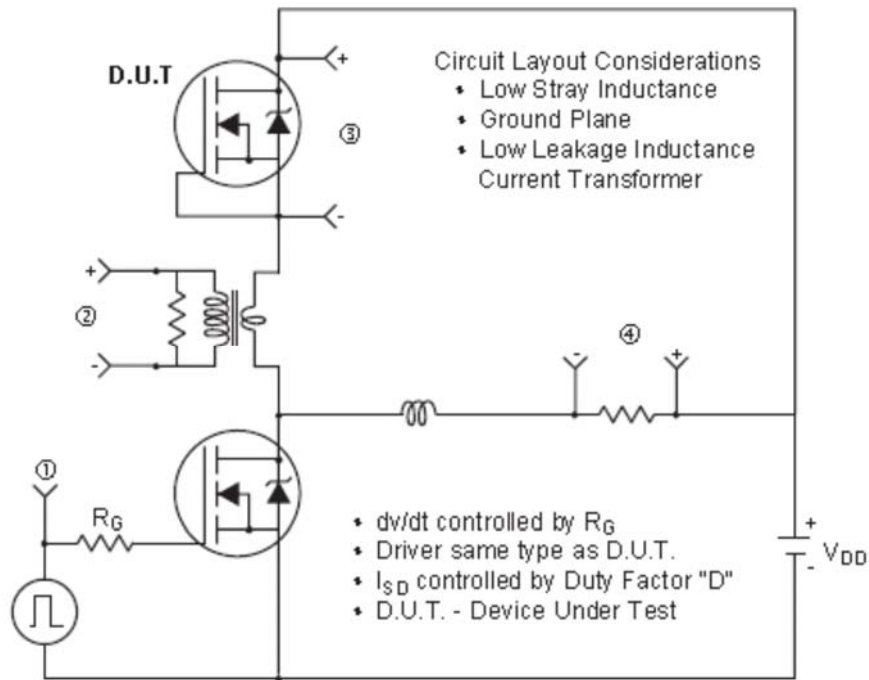
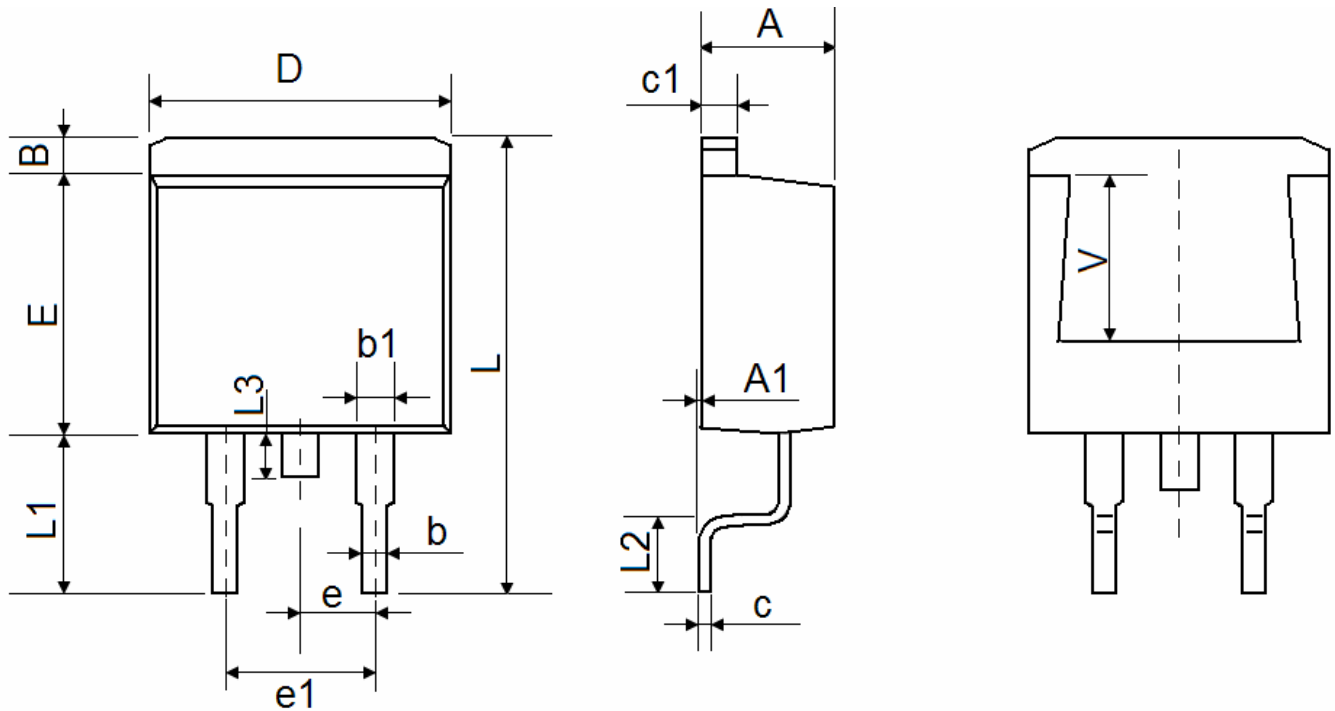


Figure 4: Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

Package Information : TO-263



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.170	1.370	0.046	0.054
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	15.050	15.450	0.593	0.608
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
V	5.600 REF		0.220 REF	