



## Description

### JMT N-channel MOSFET

#### Features

- $V_{DS}=30V$ ,  $I_D=13A$
- $R_{DS(ON)}=9m\Omega$  (Typ.) @  $V_{GS}=10V$   
 $R_{DS(ON)}=11m\Omega$  (Typ.) @  $V_{GS}=4.5V$
- Low Gate Charge
- Low Reverse Recovery Charge
- Fast Switching
- Improved  $dv/dt$  Capability

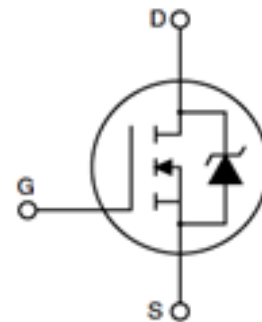
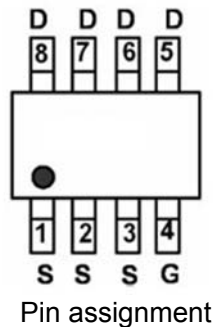
#### Application

- Uninterruptible Power Supply(UPS)
- DC-DC Power Converter
- Synchronous Rectification

#### Package



SOP-8



### Absolute Maximum Ratings (T<sub>C</sub>=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units
$V_{DSS}$	Drain-Source Voltage	30	V
$V_{GSS}$	Gate-Source Voltage	±20	V
$I_D$	Continuous Drain Current	T <sub>C</sub> = 25°C	13
		T <sub>C</sub> = 100°C	8
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	52	A
$P_D$	Power Dissipation	T <sub>A</sub> = 25°C	3.1
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	40	°C/W
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150	°C



## Electrical Characteristics (T<sub>C</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V,	-	-	1.0	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	-	-	±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	0.8	-	2.2	V
R <sub>DSON</sub>	Static Drain-Source on-Resistance <small>note2</small>	V <sub>GS</sub> =10V, I <sub>D</sub> =13A	-	9	12	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	-	11	15	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =13A	-	43	-	S
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> = 0V, f = 1.0MHz	-	1250	-	pF
C <sub>oss</sub>	Output Capacitance		-	168	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	127	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =30V, I <sub>D</sub> =13A, V <sub>GS</sub> =10V	-	23	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	2.2	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	5.5	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =15V, I <sub>D</sub> =1A, R <sub>G</sub> =3Ω, V <sub>GS</sub> =4.5V	-	15	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	25	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	39	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	22	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	13	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	52	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =30A	-	0.8	1.3	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =13A,	-	13	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge	di/dt=100A/μs	-	1.6	-	nC

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

## Typical Performance Characteristics

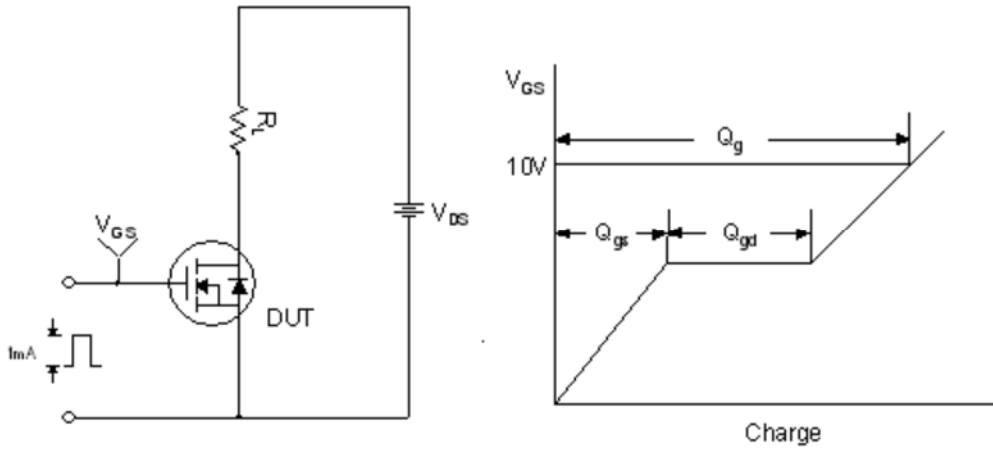


Figure 1. Gate Charge Test Circuit & Waveform

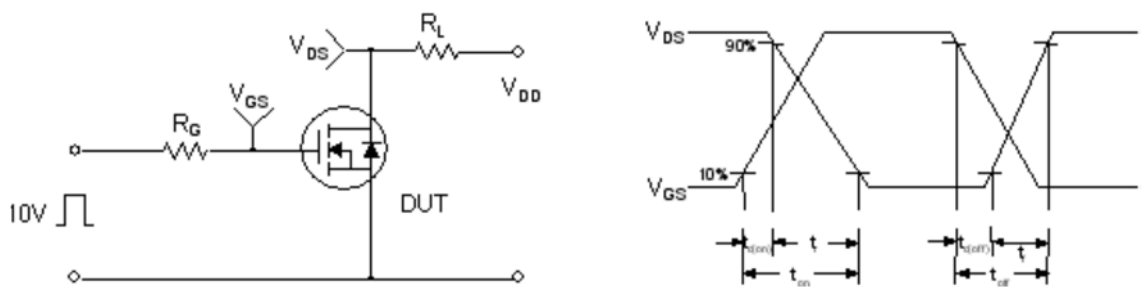


Figure 2. Resistive Switching Test Circuit & Waveforms

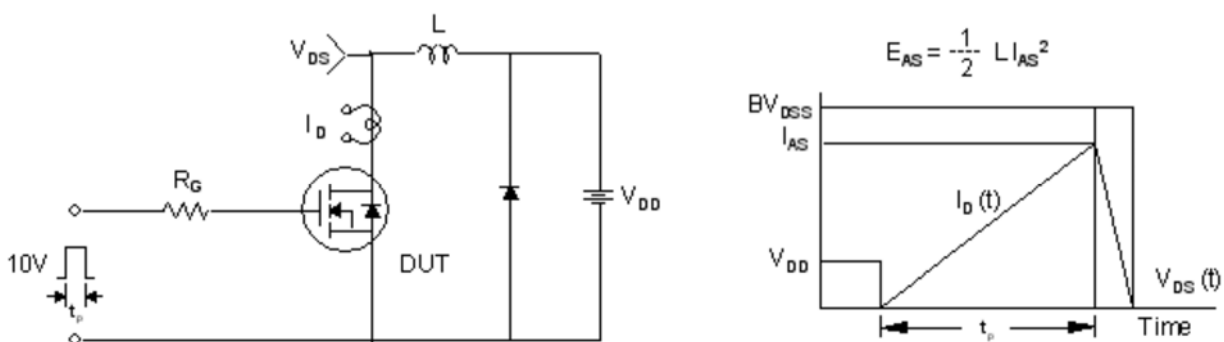


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

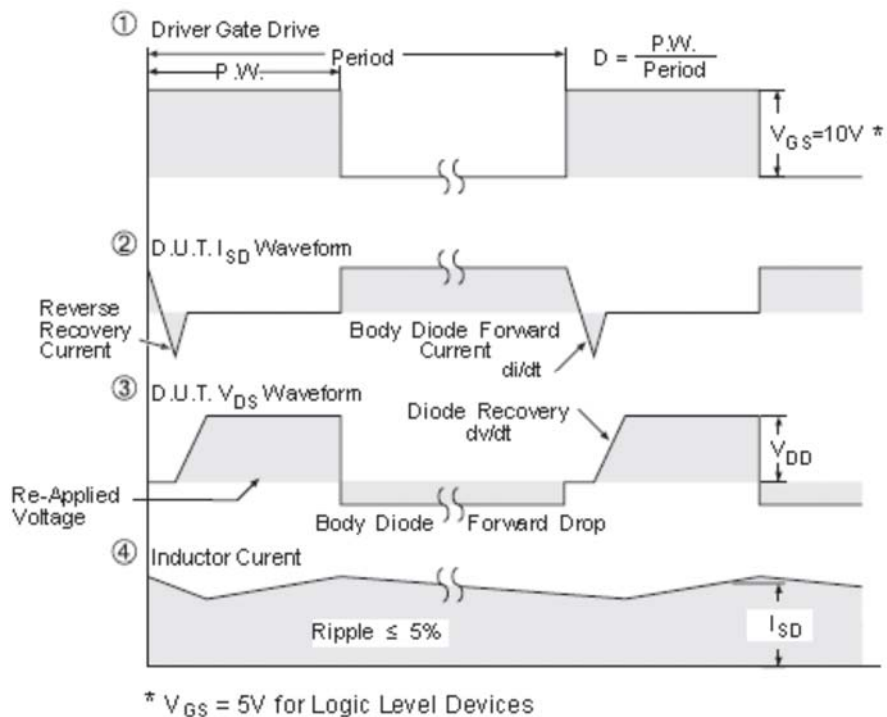
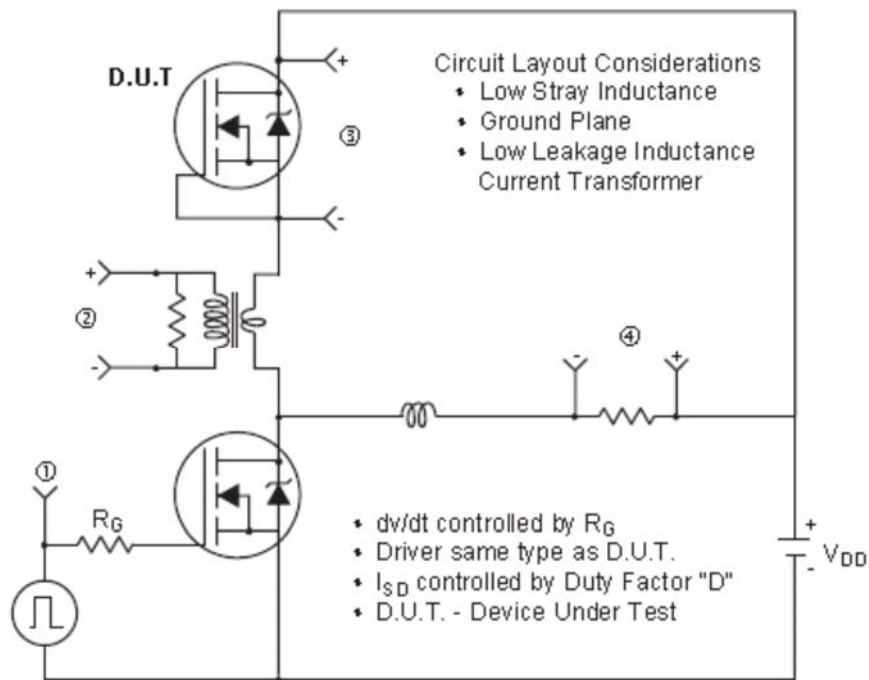
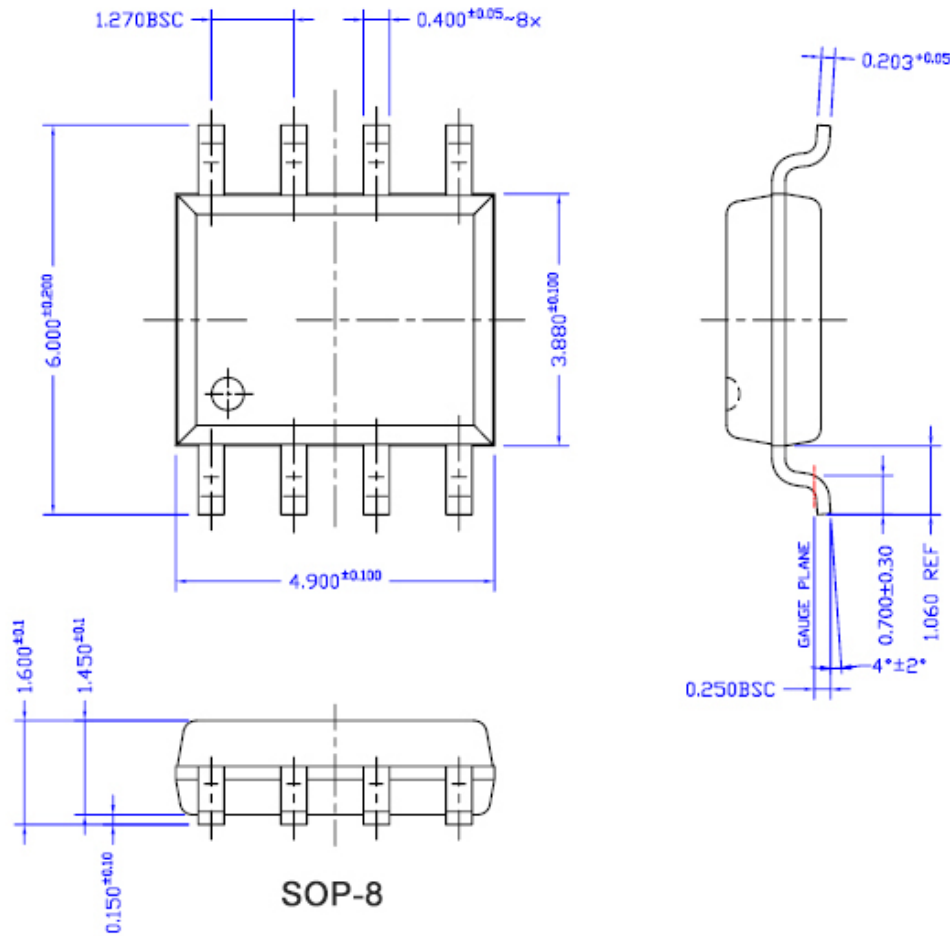


Figure 4. Peak Diode Recovery  $dv/dt$  Test Circuit & Waveforms (For N-channel)



## Package Mechanical Data




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