

30V N-Channel Mosfet

FEATURES

$R_{DS(ON)} \leq 12m\ \Omega$ @VGS=10V

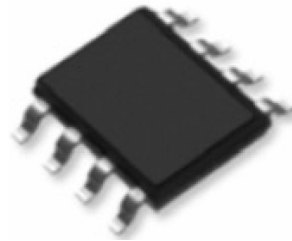
$R_{DS(ON)} \leq 15m\ \Omega$ @VGS=4.5V

APPLICATIONS

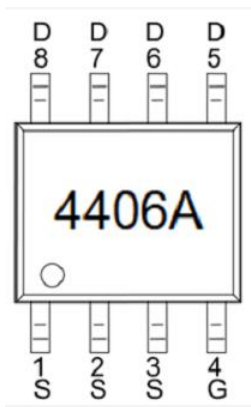
UPS

DC-DC Power Converter

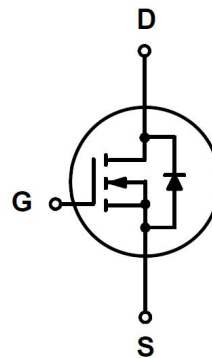
SOP-8



MARKING



N-CHANNEL MOSFET



Maximum ratings (T_c=25°C unless otherwise noted)

Symbol	Param	Max.	Units
V _{DSS}	Drain-Source Voltage	30	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _C = 25°C	13
		T _C = 100°C	8
I _{DM}	Pulsed Drain Current ^{note1}	52	A
P _D	Power Dissipation	T _A = 25°C	3.1
R _{θJA}	Thermal Resistance, Junction to Ambient	40	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°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	$V_{DS}=30V, V_{GS}=0V,$	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	-	2.2	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS}=10V, I_D=13A$	-	9	12	m Ω
		$V_{GS}=4.5V, I_D=10A$	-	11	15	
g_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=13A$	-	43	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	1250	-	pF
C_{oss}	Output Capacitance		-	168	-	pF
C_{rss}	Reverse Transfer Capacitance		-	127	-	pF
Q_g	Total Gate Charge	$V_{DS}=30V, I_D=13A,$ $V_{GS}=10V$	-	23	-	nC
Q_{gs}	Gate-Source Charge		-	2.2	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	5.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V, I_D=1A,$ $R_G=3\Omega, V_{GS}=4.5V$	-	15	-	ns
t_r	Turn-on Rise Time		-	25	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	39	-	ns
t_f	Turn-off Fall Time		-	22	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	13	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	52	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A$	-	0.8	1.3	V
t_{rr}	Reverse Recovery Time	$I_S=13A,$ $di/dt=100A/\mu s$	-	13	-	ns
Q_{rr}	Reverse Recovery Charge		-	1.6	-	nC

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

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

Typical Performance Characteristics

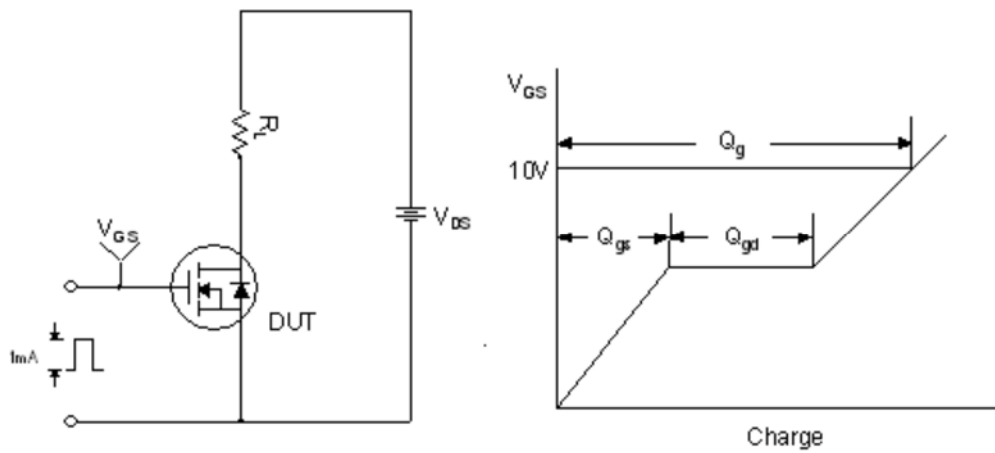


Figure 1. Gate Charge Test Circuit & Waveform

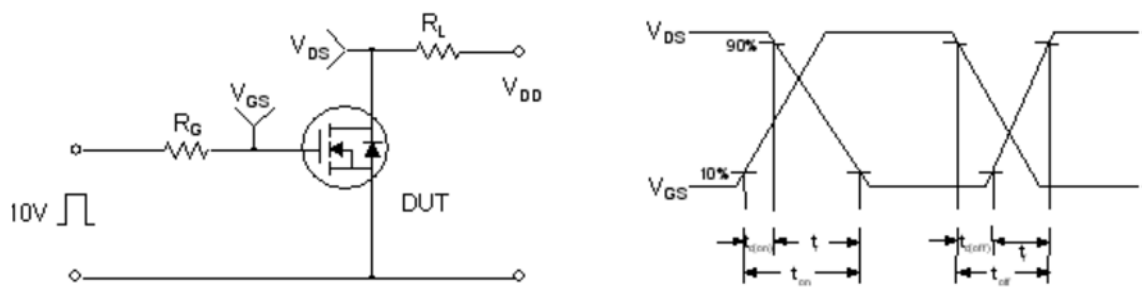


Figure 2. Resistive Switching Test Circuit & Waveforms

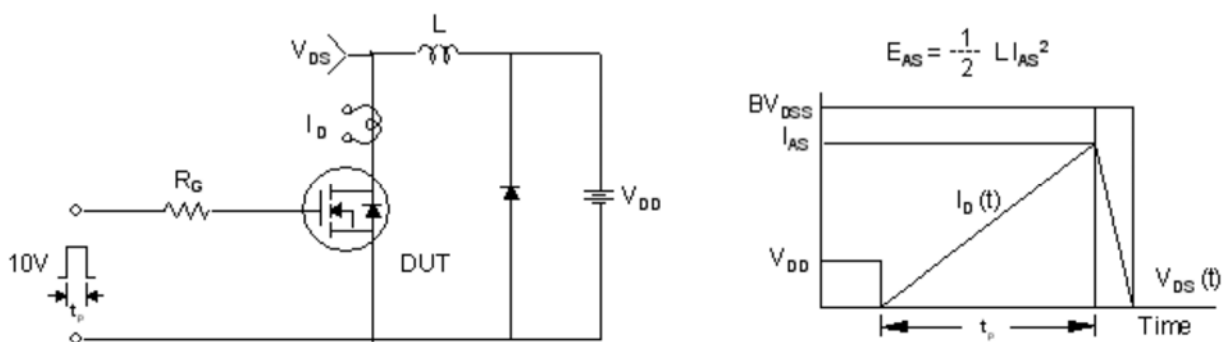
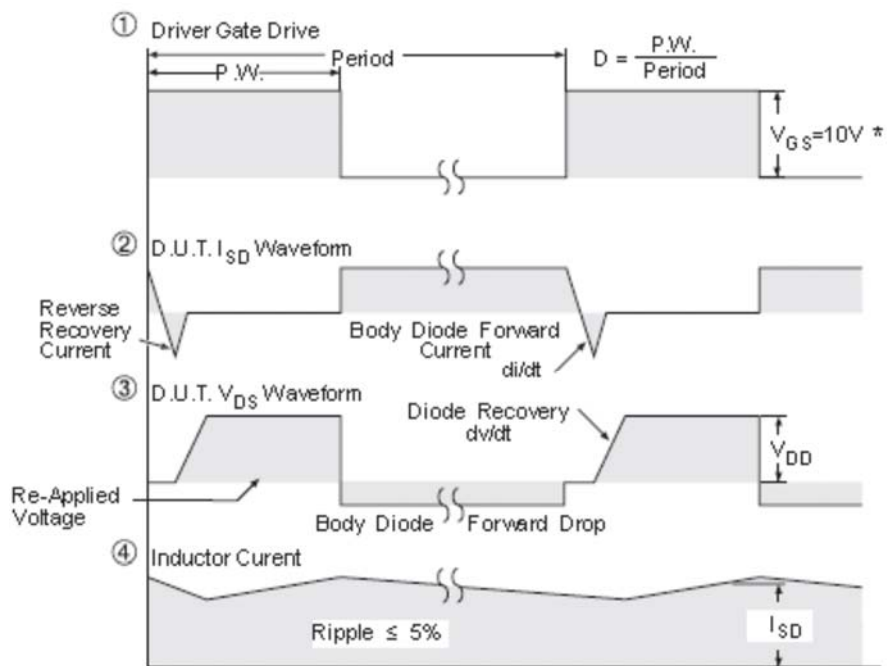
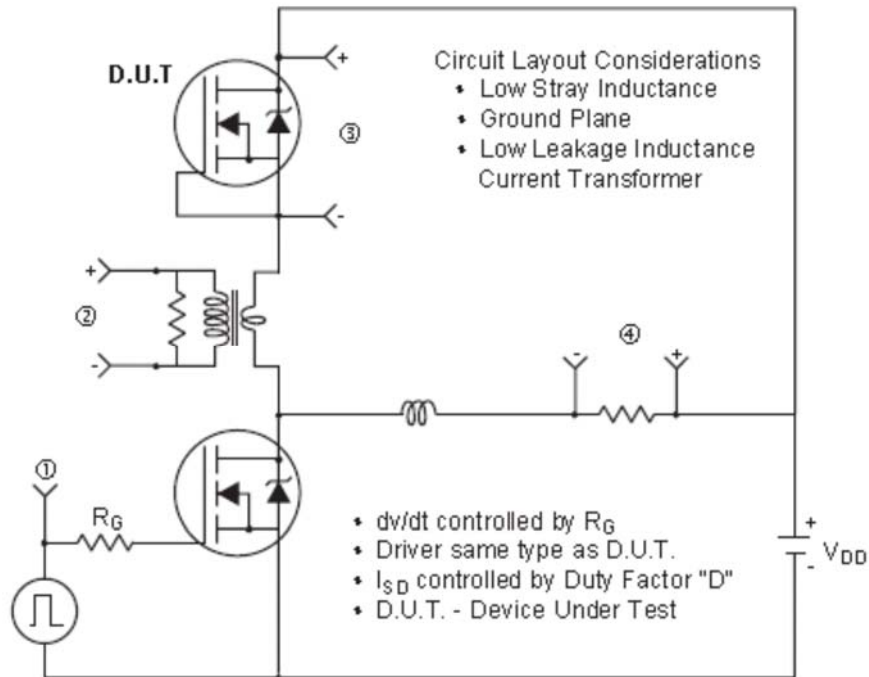


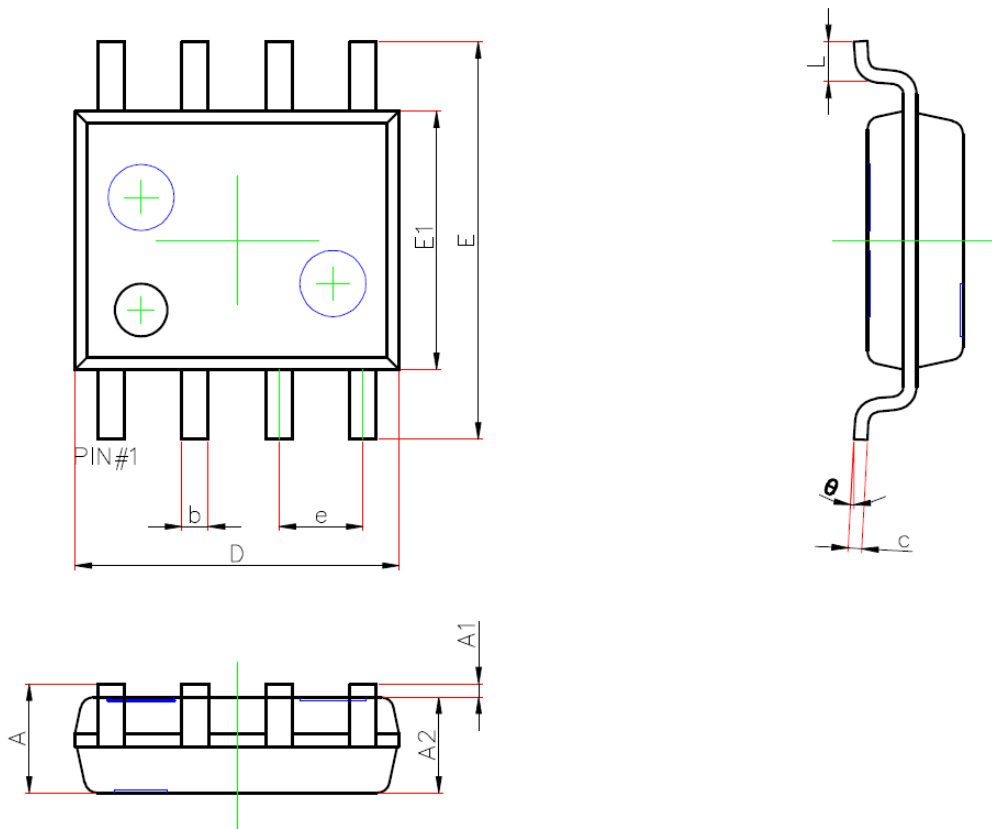
Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms



* $V_{GS} = 5V$ for Logic Level Devices

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

Package Mechanical Data



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°