

4836

POWER MOSFET

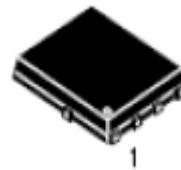
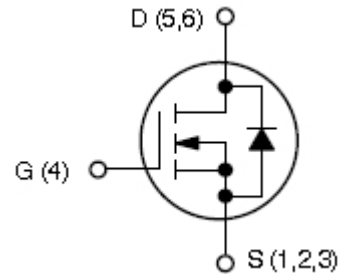
Description

4836 is N-Channel enhancement mode silicon gate power MOSFET uses advanced trench technology and to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in PWM, load switching, computer and general purpose applications.

Features

- Pb-free (meets ROHS & Sony 259 specifications)
- Fast switching capability
- $R_{DS(ON)}=2.8m\ \Omega$ @ $V_{GS}=10V$
- $BV_{DSS}=30V$
- $I_D=95A$

Simplified Schematic



V = Version Number,

Y = Year

WW = Work Week

A= Manufacturer Number

Maximum Ratings $T_A=25^\circ C$ unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current, $V_{GS}@ 10V$	I_D	$T_C=25^\circ C$: 95 $T_C=100^\circ C$: 65	A
Pulsed Drain Current	I_{DM}	150	A
Total Power Dissipation (PCB mount)	P_D	$T_C=25^\circ C$: 55	W
Single Pulse Avalanche Energy	E_{AS}	100	mJ
Storage Temperature Range	T_{STG}	-55 to 175	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Value	Units
Maximum Thermal Resistance, Junction-case	Rthj-c	2.27	$^\circ C/W$
Maximum Thermal Resistance, Junction-ambient (PCB mount)	Rthj-a	60	$^\circ C/W$

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	30	32		V	$V_{GS}=0V, I_D=250\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$		2.85 4.6	3.0 5.6	m Ω	$V_{GS}=10V, I_D=25A$ $V_{GS}=4.5V, I_D=20A$
Gate Threshold Voltage	$V_{GS(th)}$	1		2	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Forward Transconductance	g_{fss}		50		S	$V_{DS}=10V, I_D=25A$
Zero Gate Voltage Drain Current	I_{DSS}			1	μA	$V_{DS}=25V, V_{GS}=0V$
Gate-Body Leakage Current	I_{GSS}			± 100	nA	$V_{GS}=\pm 20V$
Total Gate Charge	Q_G		40 22	45	nC	$V_{GS}=10V, V_{DS}=12.5V, I_D=20A$ $V_{GS}=4.5V, V_{DS}=12.5V, I_D=20A$
Gate-Source Charge	Q_{GS}		7		nC	$V_{GS}=10V, V_{DS}=12.5V, I_D=20A$
Gate-Drain Charge	Q_{GD}		10		nC	$V_{DS}=12.5V, V_{GS}=10V, I_D=20A$
Turn-On Delay Time	$t_{D(ON)}$		23		ns	$V_{DS}=12.5V, I_D=20A, R_G=3\Omega, R_L=0.6\Omega$
Rise Time			10		ns	$V_{DS}=12.5V, I_D=20A, R_G=3\Omega, R_L=0.6\Omega$
Turn-Off Delay Time	$t_{D(off)}$		27		ns	$V_{GS}=10V, V_{DS}=12.5V, R_L=0.68\Omega, R_G=3\Omega$
Fall Time	t_f		8		ns	$V_{GS}=10V, V_{DS}=12.5V, R_L=0.68\Omega, R_G=3\Omega$
Input Capacitance	C_{ISS}		2077		pF	$V_{DS}=12.5V, V_{GS}=0V, f=1MHz$
Output Capacitance	C_{OSS}		496		pF	$V_{DS}=12.5V, V_{GS}=0V, f=1MHz$
Reverse Transfer Capacitance	C_{RSS}		290		pF	$V_{DS}=12.5V, V_{GS}=0V, f=1MHz$
Gate Resistance	R_g		1.5	1.8	Ω	$V_{GS}=0V, f=1MHz$

Source-Drain Diode

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward On Voltage	V_{sd}			1	V	$I_S=20A, V_{GS}=0V$
Reverse Recovery Time	T_{rr}		29		ns	$I_S=20A, V_{GS}=0V$
Reverse Recovery Charge	Q_{rr}		16		nC	$dI_{SD}/dt=100A/\mu s$

SD4836- TYPICAL PERFORMANCE CURVES

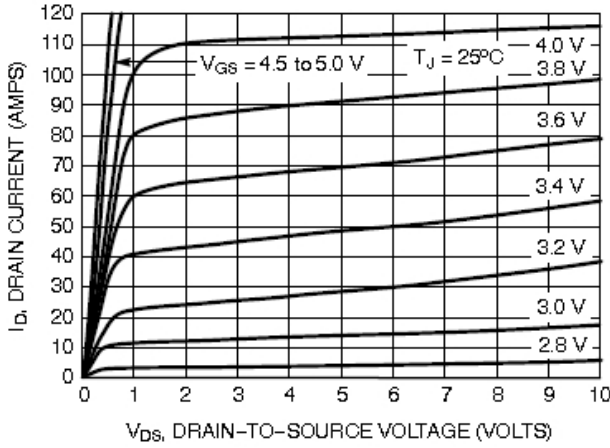


Figure 1. On-Region Characteristics

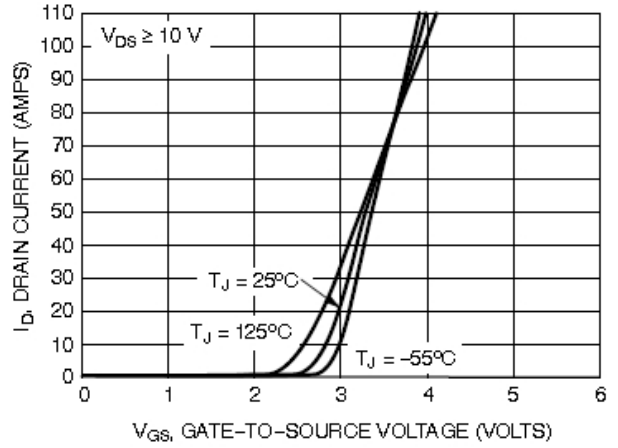


Figure 2. Transfer Characteristics

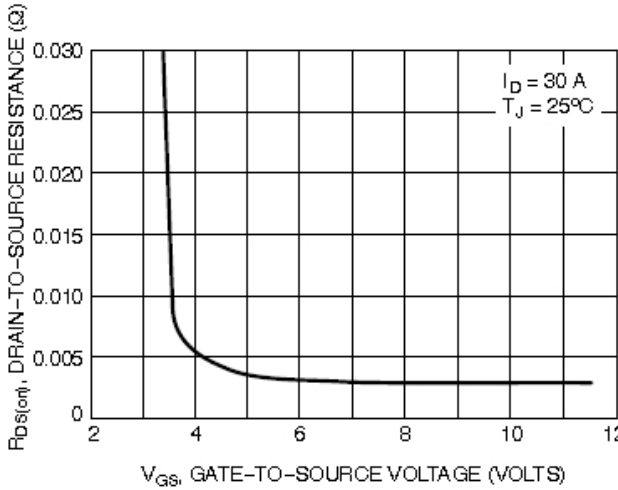


Figure 3. On-Resistance vs. Gate-to-Source Voltage

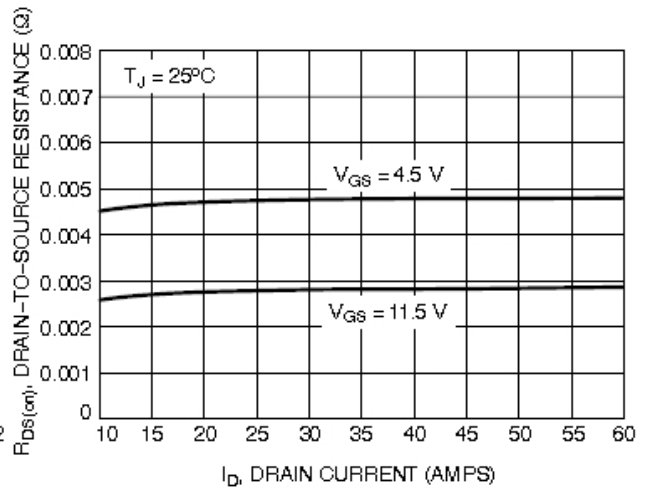


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

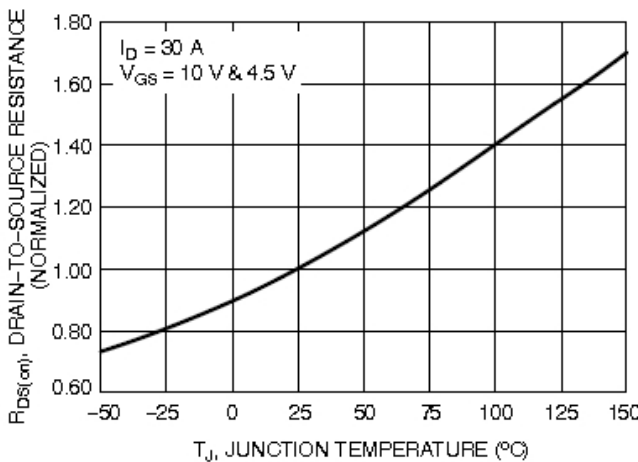


Figure 5. On-Resistance Variation with Temperature

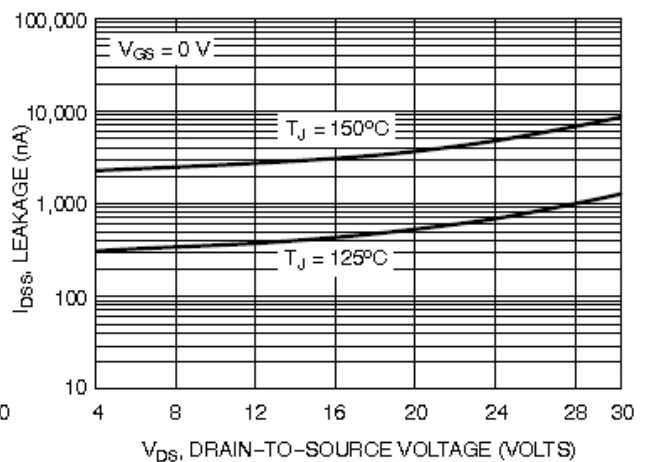
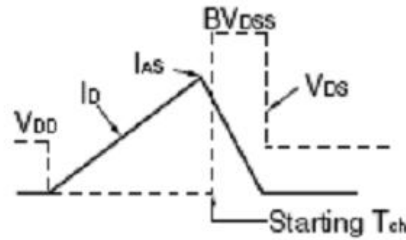
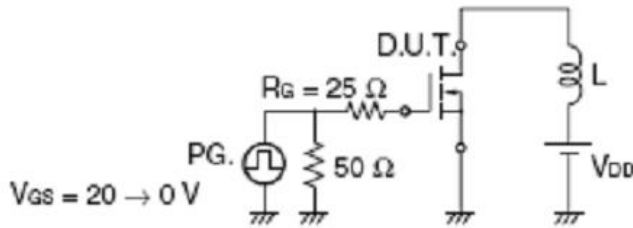
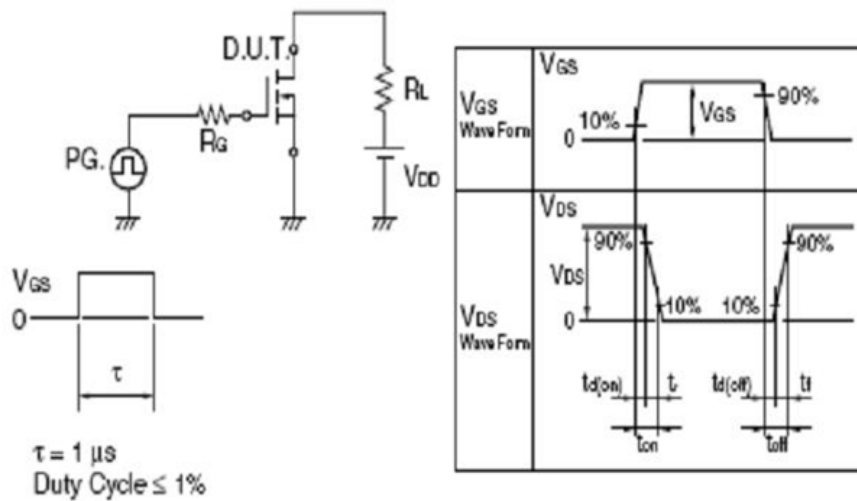


Figure 6. Drain-to-Source Leakage Current vs. Voltage

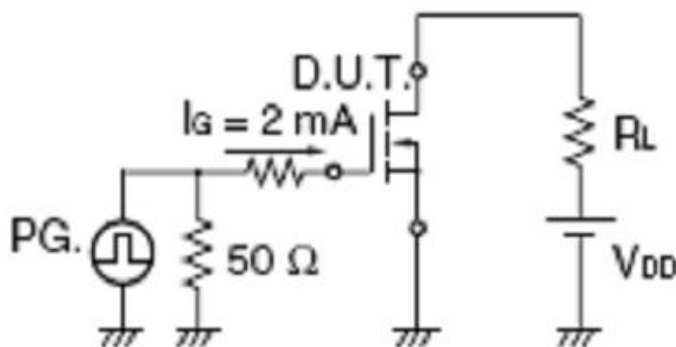
TEST CIRCUIT 1 AVALANCHE CAPABILITY



TEST CIRCUIT 2 SWITCHING TIME



TEST CIRCUIT 3 GATE CHARGE



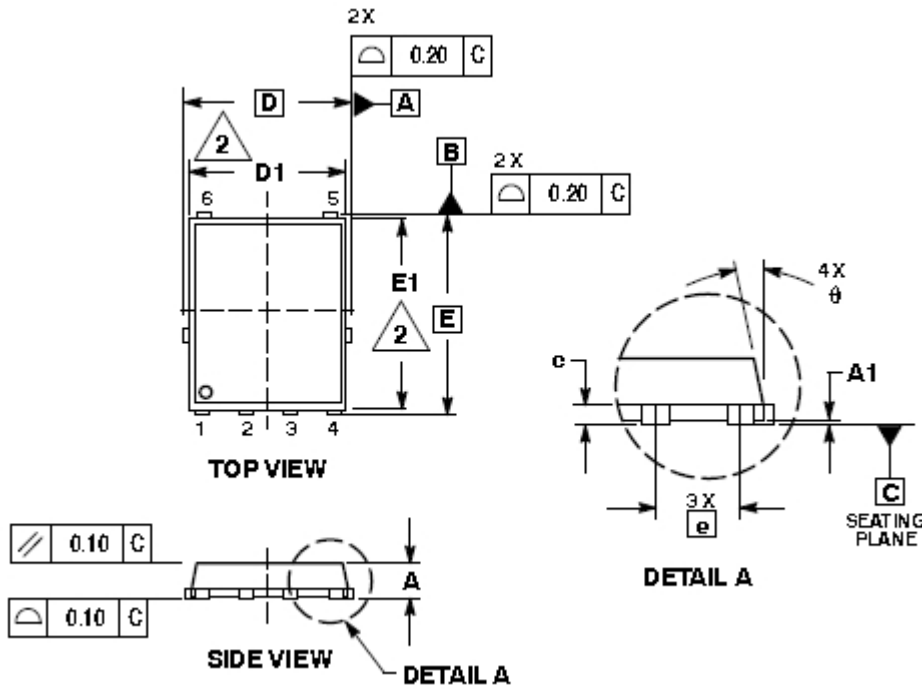
PACKAGE DIMENSIONS

PDFN

(SO-8FL)

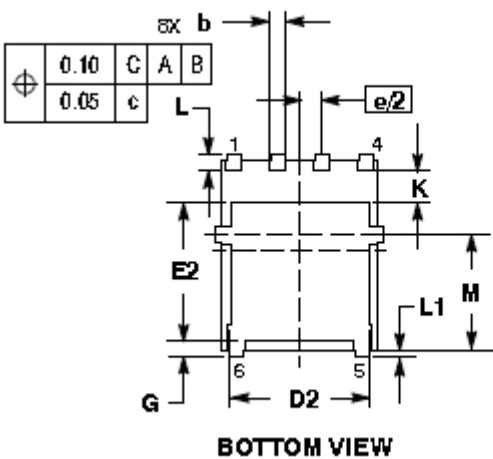
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS..

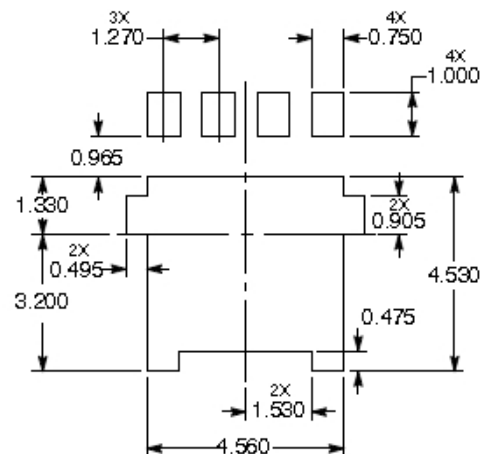


DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.90	1.00	1.10
A1	0.00	---	0.05
b	0.33	0.41	0.51
c	0.23	0.28	0.33
D	5.15 BSC		
D1	4.50	4.90	5.10
D2	3.50	---	4.22
E	6.15 BSC		
E1	5.50	5.80	6.10
E2	3.46	---	4.30
e	127 BSC		
G	0.51	0.61	0.71
K	0.51	---	---
L	0.51	0.61	0.71
L1	0.05	0.17	0.20
M	3.00	3.40	3.80
θ	0 °	---	12 °

SOLDERING FOOTPRINT*



- STYLE 1:
 PIN 1. SOURCE
 2. SOURCE
 3. SOURCE
 4. GATE
 5. DRAIN
 6. DRAIN



ORIGINAL BLANK

IMPORTANT NOTICE

Sunsigns assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all Sunsigns products described or contained herein. Sunsigns products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.