

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	IRLMS6802
▶ Overseas	Part Number	IRLMS6802
▶ Equivalent	Part Number	IRLMS6802

EV is the abbreviation of name EVVO

-20V P-Channel Enhancement Mode MOSFET

Description

The IRLMS6802 uses advanced trench It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications

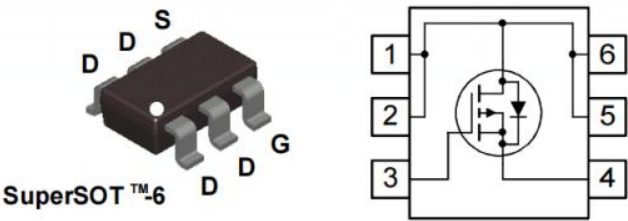
Application

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature

General Features

- $V_{DS} = -20V, I_D = -6.5A$
- $R_{DS(ON)} < 35m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} < 54m\Omega @ V_{GS}=1.5V$

SOT23-6L Pin Configuration



Absolute max Rating: @T_A=25°C unless otherwise specified

Symbol	Parameter	Max.	Units
$I_D @ TC = 25^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V$	-6.5①	A
$I_D @ TC = 70^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V$	-4.3 ①	
I_{DM}	Pulsed Drain Current ②	-30	
$P_D @ TC = 25^{\circ}C$	Power Dissipation ③	1.4	W
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-to-Source Voltage	± 8	V
$T_J T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	°C
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	90	°C /W

-20V P-Channel Enhancement Mode MOSFET
Electrical Characterizes @T_A=25°C unless otherwise specified

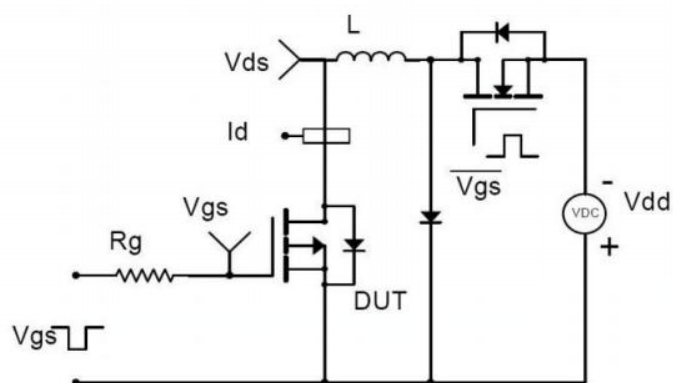
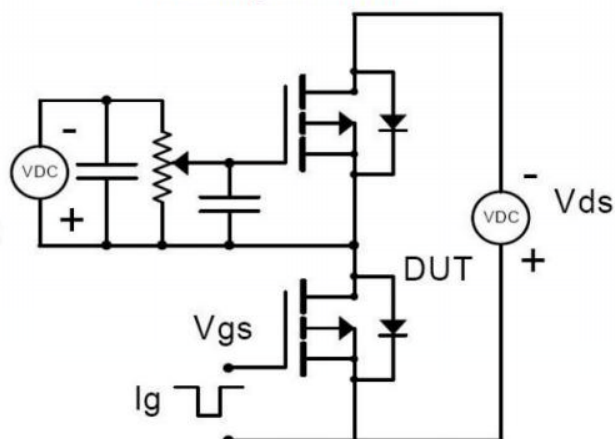
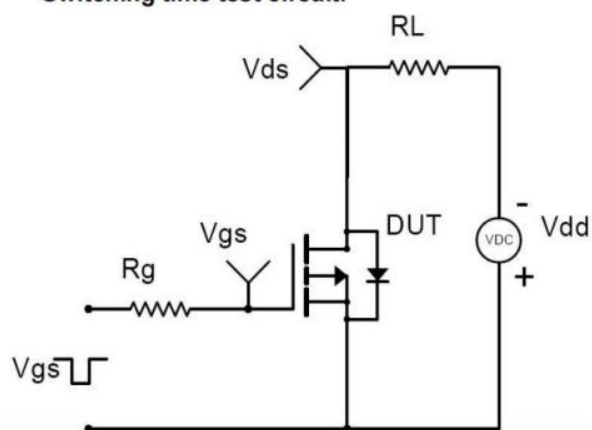
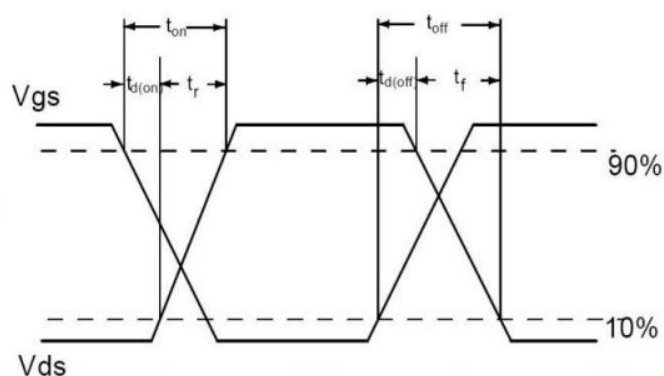
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-to-Source breakdown voltage	V _{GS} = 0V, I _D = -250μA	-20	—	—	V
R _{DS(on)}	Static Drain-to-Source on-resistance	V _{GS} = -4.5V, I _D = -4A	—	30	35	mΩ
		V _{GS} = -1.5V, I _D = -3A	—	40	54	
		V _{GS} = -1.8V, I _D = -2A	—	56	73	
V _{GS(th)}	Gate threshold voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.3	—	-1.0	V
		T _J = 125°C	—	-0.44	—	
I _{DSS}	Drain-to-Source leakage current	V _{DS} = -16V, V _{GS} = 0V	—	—	-1	μA
		T _J = 125°C	—	—	-50	
I _{GSS}	Gate-to-Source forward leakage	V _{GS} = 8V	—	—	10	μA
		V _{GS} = -8V	—	—	-10	
Q _g	Total gate charge	I _D = -4A, V _{DS} = -10V, V _{GS} = -4.5V	—	10	—	nC
Q _{gs}	Gate-to-Source charge		—	0.77	—	
Q _{gd}	Gate-to-Drain("Miller") charge		—	3.5	—	
t _{d(on)}	Turn-on delay time	V _{GS} = -4.5V, V _{DS} = -10V, R _{GEN} = 3Ω,	—	10	—	ns
t _r	Rise time		—	8.6	—	
t _{d(off)}	Turn-Off delay time		—	29	—	
t _f	Fall time		—	13	—	
C _{iss}	Input capacitance	V _{GS} = 0V, V _{DS} = -10V, f = 1MHz	—	939	—	pF
C _{oss}	Output capacitance		—	130	—	
C _{rss}	Reverse transfer capacitance		—	111	—	

Source-Drain Ratings and Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
I _S	Continuous Source Current (Body Diode)	MOSFET symbol showing the integral reverse p-n junction diode.	—	—	-4.2A ①	A
I _{SM}	Pulsed Source Current (Body Diode)		—	—	-30	A
V _{SD}	Diode Forward Voltage	I _S = 1A, V _{GS} = 0V	—	-0.76	-1.0	V
t _{rr}	Reverse Recovery Time	T _J = 25°C, I _F = -4A, di/dt = 100A/μs	—	8.7	—	ns
Q _{rr}	Reverse Recovery Charge		—	2.3	—	nC

Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
 ② Repetitive rating; pulse width limited by max. junction temperature.
 ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
 ④ The value of R_{θJA} is measured with the device mounted on 1 in 2 FR 4 board with 2oz. Copper, in a still air environment with T_A = 25°C

-20V P-Channel Enhancement Mode MOSFET
Test circuits and Waveforms
EAS test circuit:

Gate charge test circuit:

Switching time test circuit:

Switch Waveforms:


-20V P-Channel Enhancement Mode MOSFET

Typical electrical and thermal characteristics

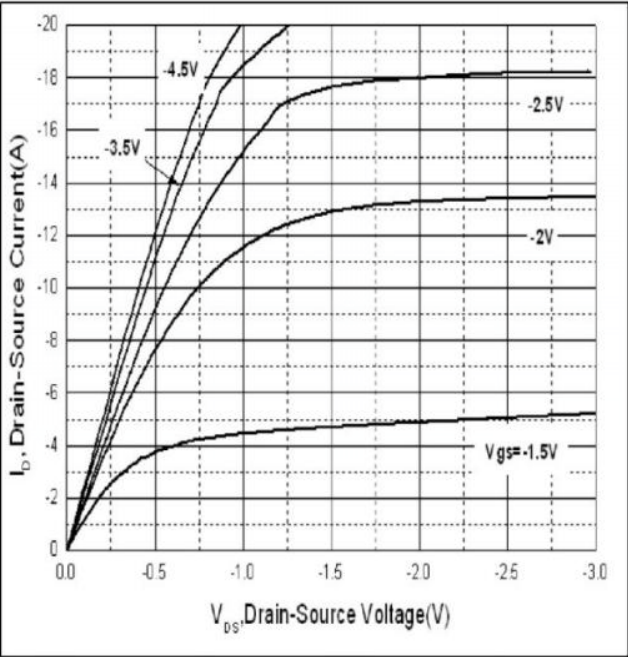


Figure 1: Typical Output Characteristics

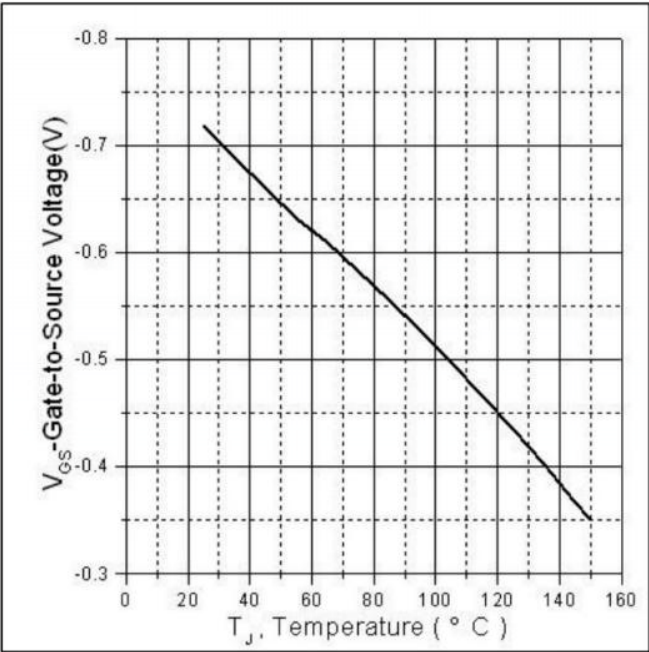


Figure 2. Gate to source cut-off voltage

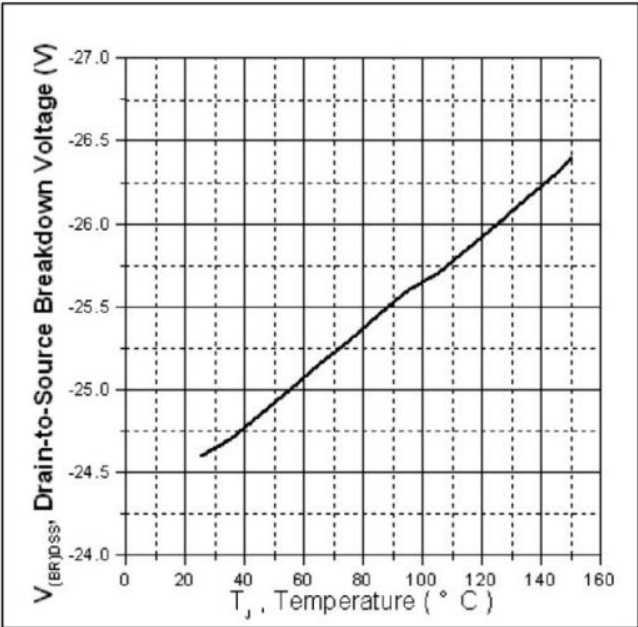


Figure 3. Drain-to-Source Breakdown Voltage Vs.
Case Temperature

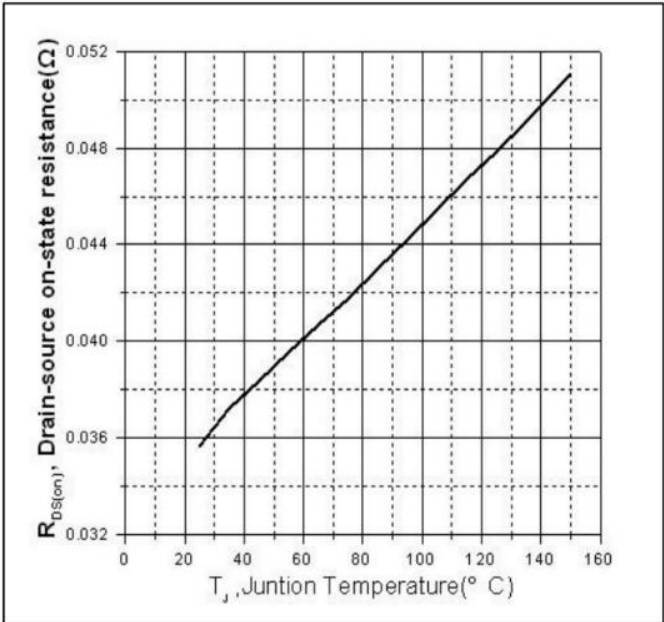


Figure 4: Normalized On-Resistance Vs. Case
Temperature

-20V P-Channel Enhancement Mode MOSFET

Typical electrical and thermal characteristics

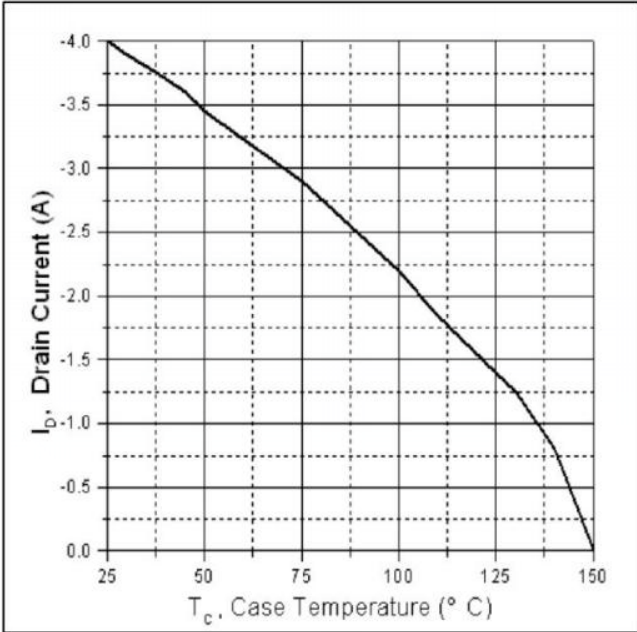


Figure 5. Maximum Drain Current Vs. Case Temperature

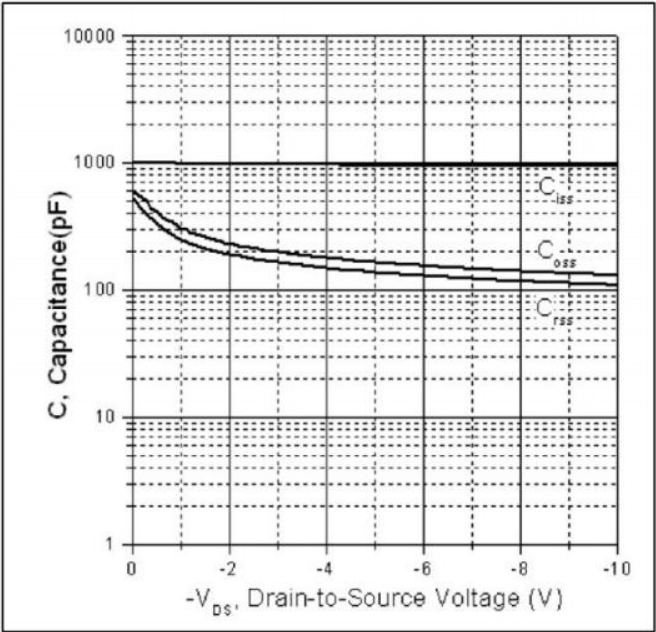


Figure 6. Typical Capacitance Vs. Drain-to-Source Voltage

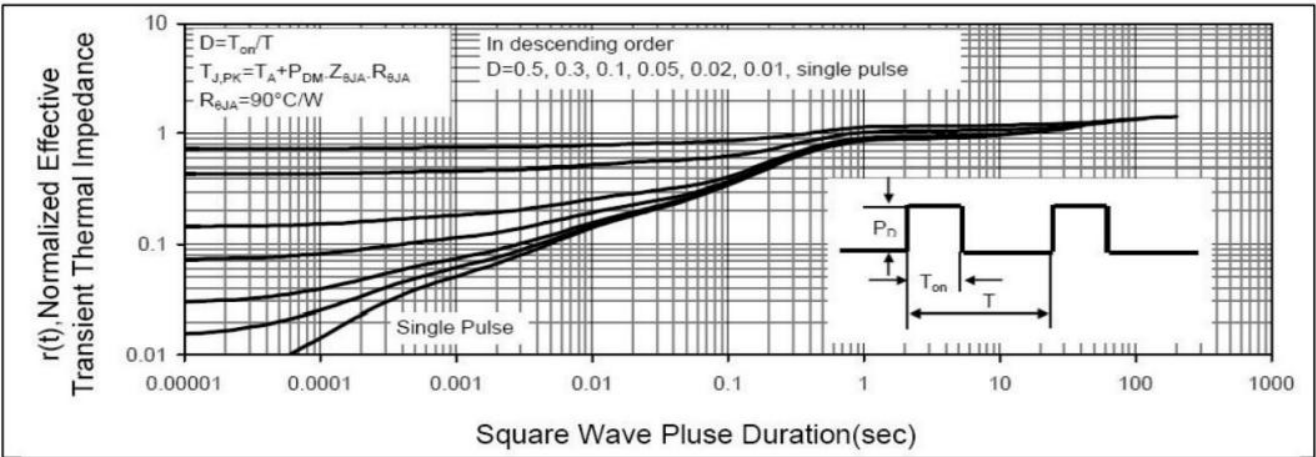
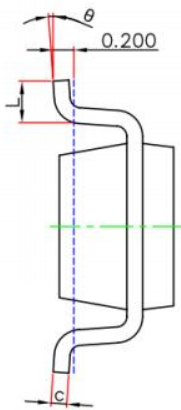
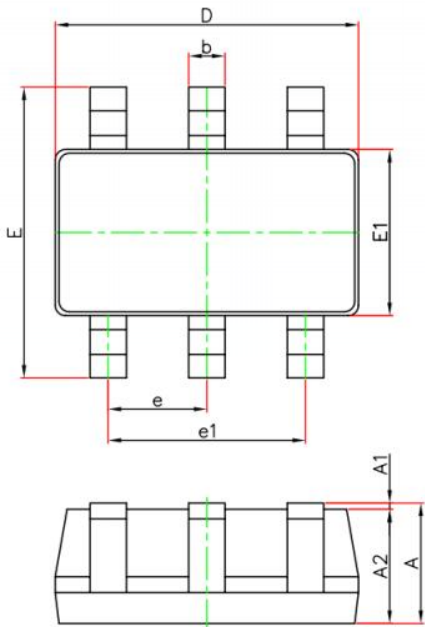


Figure7. Maximum Effective Transient Thermal Impedance Junction-to-Case

-20V P-Channel Enhancement Mode MOSFET

SOT-23-6L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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