P-Channel Power MOSFET

描述 / Descriptions

SOP-8 塑封封装 P 沟道 MOS 场效应管。

P-Channel Enhancement Mode Field Effect Transistor in a SOP-8 Plastic Package.

特征 / Features

V_{DS} (V) = -30V

I_D = -15 A (V_{GS} = -20V)

$R_{DS(ON)}$ < 11mΩ (V_{GS} = -20V)

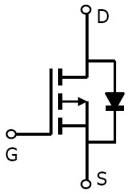
$R_{DS(ON)}$ < 12mΩ (V_{GS} = -10V)

用途 / Applications

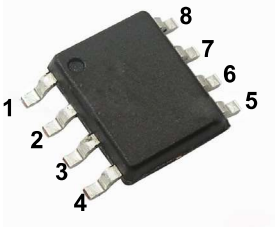
用于电源管理，便携式设备和电池供电系统。

Power Management in Notebook computer, Portable Equipment and Battery powered systems.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1：S　PIN 2：S　PIN 3：S　PIN 4：G

PIN 5：D　PIN 6：D　PIN 7：D　PIN 8：D

印章代码 / Marking

见印章说明　See Marking Instructions.

极限参数 / Absolute Maximum Ratings(Ta=25℃)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current[A]	I_D (T_a=25°C)	-15	A
Continuous Drain Current[A]	I_D (T_a=70°C)	-12	A
Pulsed Drain Current[B]	I_{DM}	-80	A
Power Dissipation for Single Operation[A]	P_D (T_a=25℃)	3	W
Power Dissipation for Single Operation[A]	P_D (T_a=100℃)	2.1	W
Maximum Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55 ~ 150	℃
Thermal Resistance-Junction to Ambient[A]	$R_{\theta JA}$ (t≦10s)	40	℃/W
Thermal Resistance-Junction to Ambient[A]	$R_{\theta JA}$	75	℃/W
Maximum Junction-to-Lead[C]	$R_{\theta JL}$	30	℃/W

Note:

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating. Rev 1 : Sept 2005

电性能参数 / Electrical Characteristics(Ta=25℃)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=-250μA V_{GS}=0V	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V V_{GS}=0V			-1.0	μA
		V_{DS}=-24V V_{GS}=0V T_J=55°C			-5.0	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS I_D=-250μA	-1.0	-1.3	-3.0	V
On state drain current	$I_{D(ON)}$	V_{GS}=-10V V_{DS}=-5V	80			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V I_D=-15A		8.5	12	mΩ
		VGS=-10V I_D=-10A T_J=125°C		11	16	
		V_{GS}=-20V I_D=-15A		8.0	11	
		V_{GS}=-4.5V I_D=-10A		13		
Forward Transconductance	g_{FS}	V_{DS}=-5V I_D=-10A		30		S
Diode Forward Voltage	V_{SD}	I_S=-1A V_{GS}=0V		-0.72	-1.0	V
Maximum Body-Diode Continuous Current	I_S				-5.2	A
Total Gate Charge	Q_g	V_{GS}=-10V V_{DS}=-15V I_D=-10A		47.2	55	nC
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			14		
Gate Resistance	R_g	V_{GS}=0V V_{DS}=0V f=1MHz		2.0	3.0	Ω
Input Capacitance	C_{iss}	V_{GS}=0V V_{DS}=-15V f=1MHz		2476	2900	pF
Output Capacitance	C_{oss}			523		
Reverse Transfer Capacitance	C_{rss}			325		
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=-10V V_{DS}=-15V R_L=1.25Ω R_{GEN}=3Ω		14.4		ns
Turn-on Rise Time	t_r			11		
Turn-off Delay Time	$t_{d(OFF)}$			23.6		
Turn-off Fall Time	t_f			14		

电参数曲线图 / Electrical Characteristic Curve

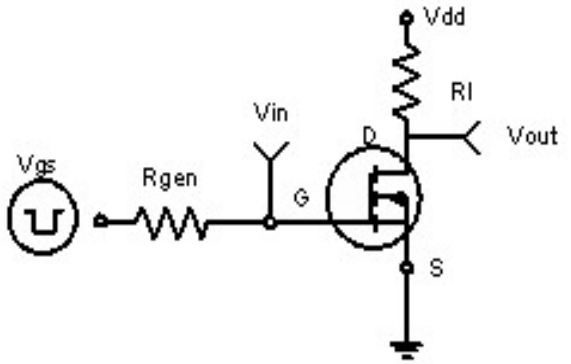


Figure 1 Switching Test Circuit

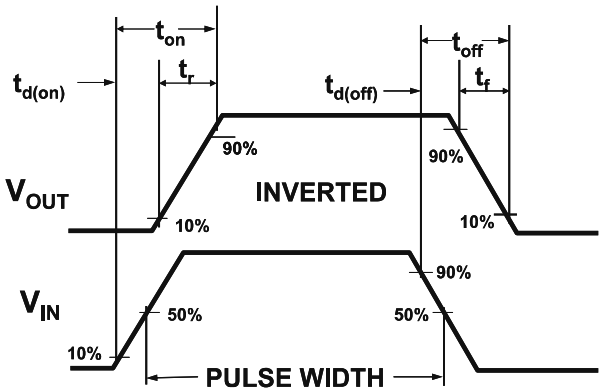


Figure 2 Switching Waveforms

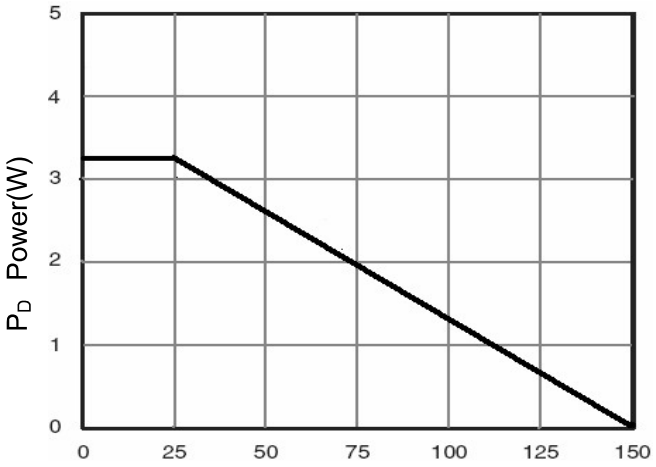


Figure 3 Power Dissipation

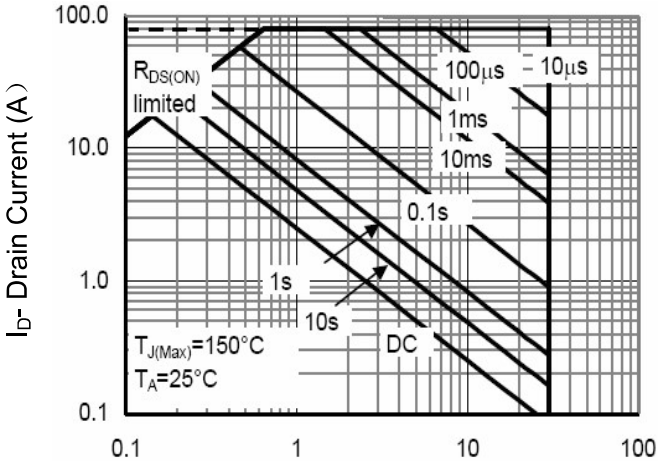


Figure 4 Safe Operation Area

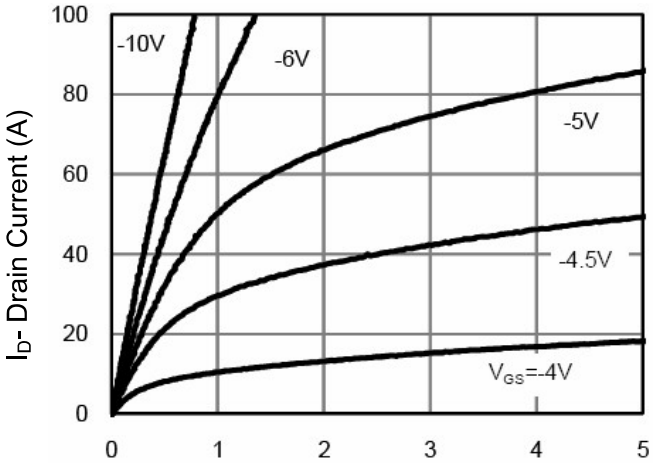


Figure 5 Output Characteristics

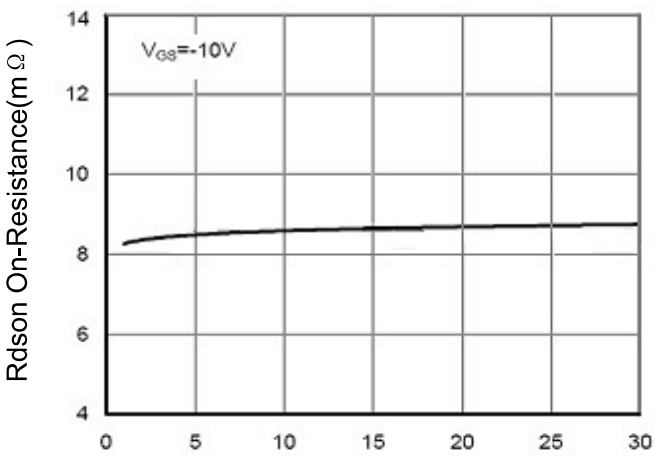


Figure 6 Drain-Source On-Resistance

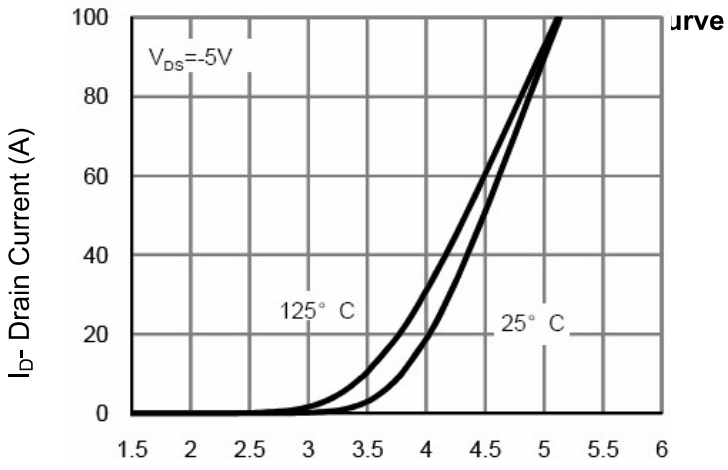


Figure 7 Transfer Characteristics

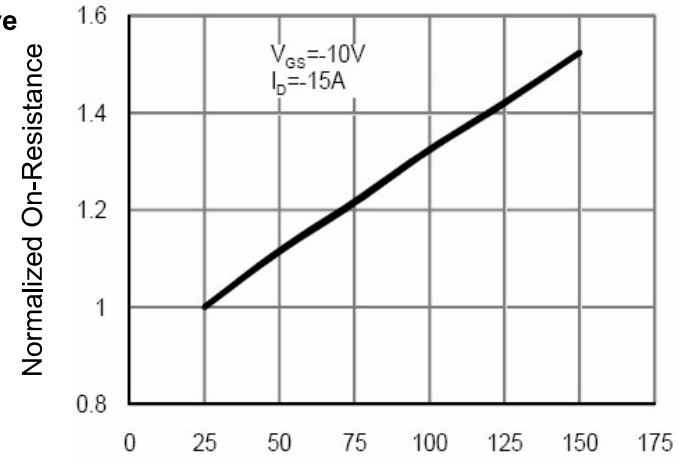


Figure 8 Drain-Source On-Resistance

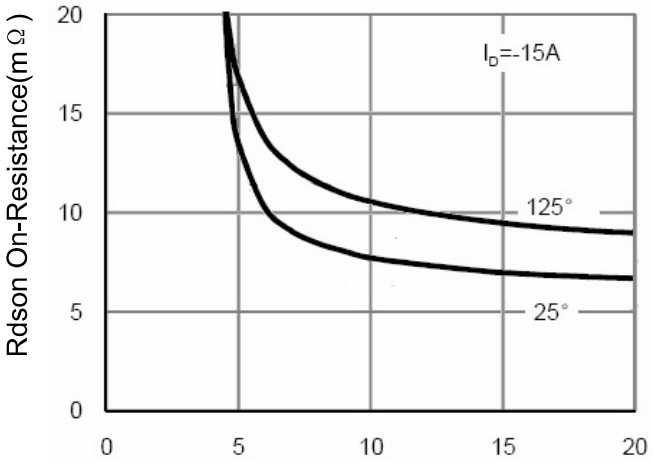


Figure 9 Rdson vs Vgs

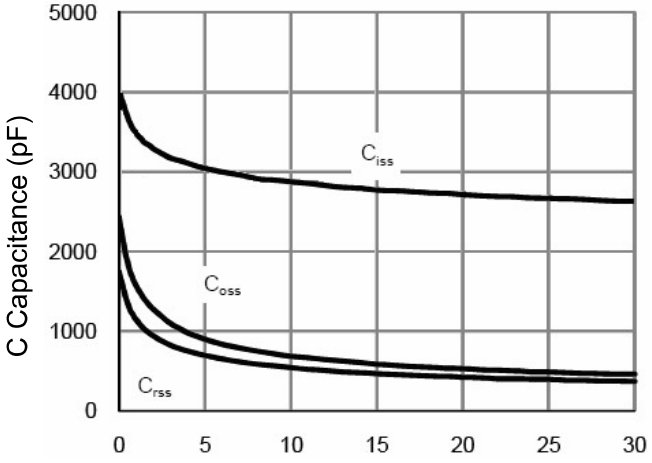


Figure 10 Capacitance vs Vds

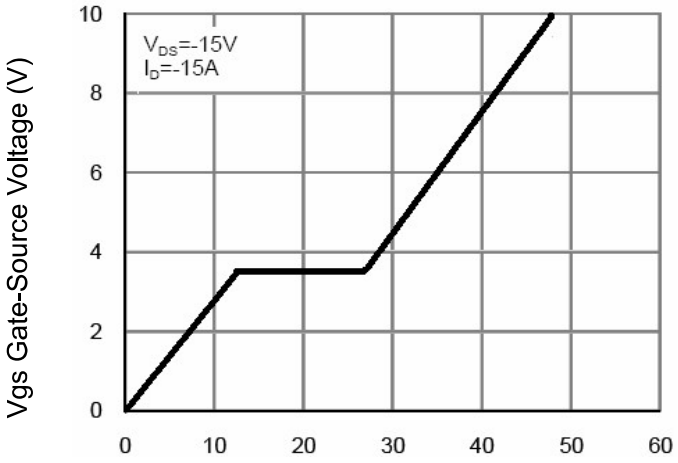


Figure 11 Gate Charge

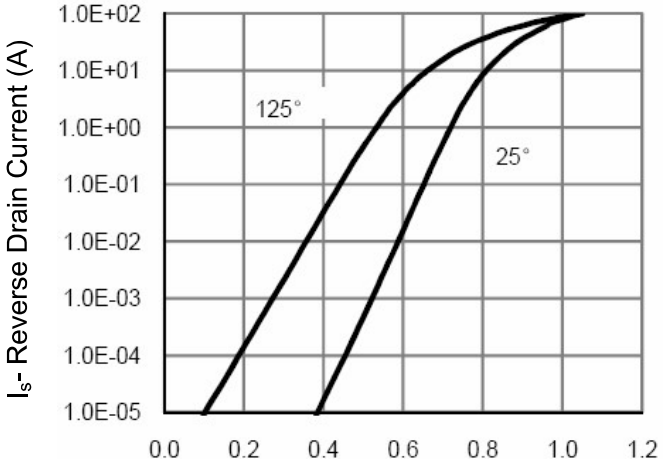
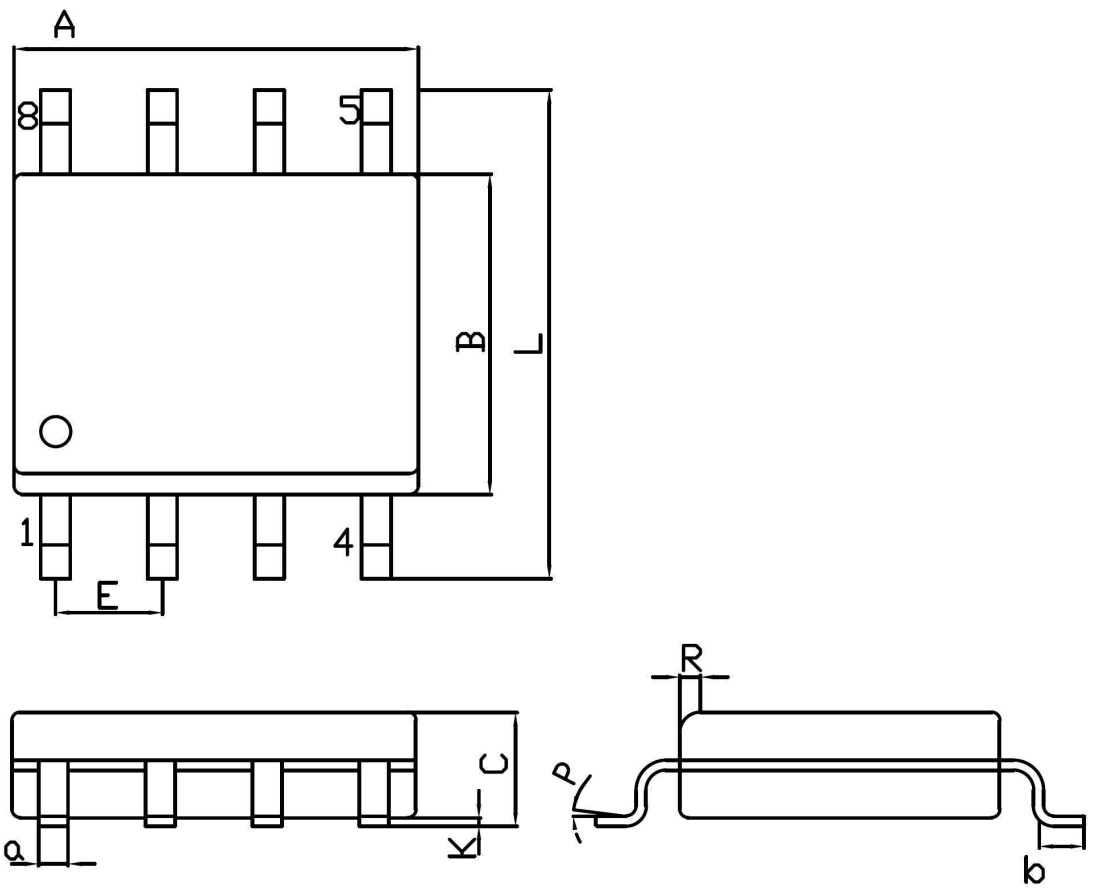


Figure 12 Source- Drain Diode Forward

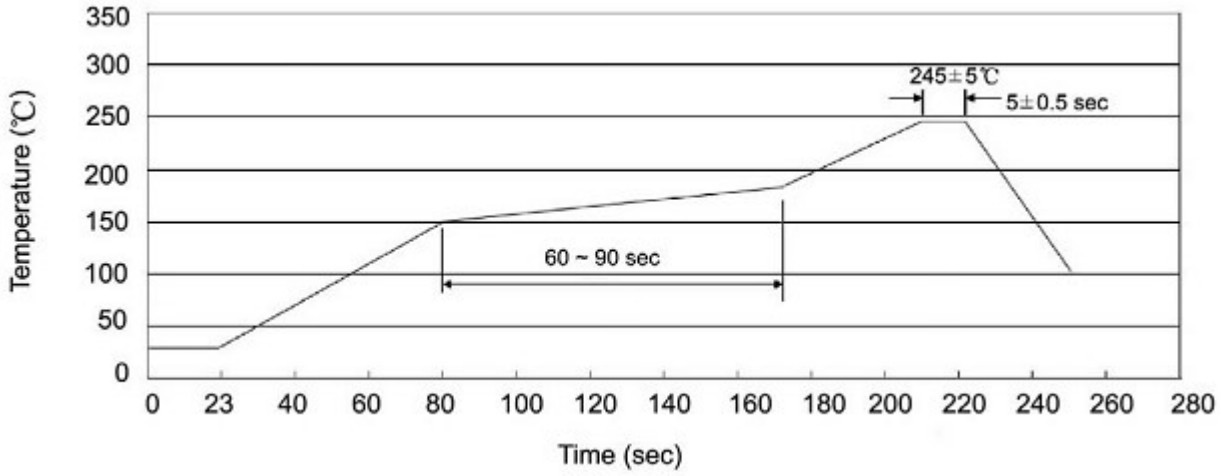
外形尺寸图 / Package Dimensions

SOP-8 Unit:mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	a	0.35	0.49
L	6.00	6.40	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

1、预热温度 25～150℃，时间 60～90sec;

2、峰值温度 245±5℃，时间持续为 5±0.5sec;

3、焊接制程冷却速度为 2～10℃/sec.

Note:

1.Preheating:25~150℃, Time:60~90sec.

2.Peak Temp.:245±5℃, Duration:5±0.5sec.

3. Cooling Speed: 2~10℃/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5℃ 时间：10±1 sec. Temp.:260±5℃ Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
SOP/ESOP-8	4,000	2	8,000	5	40,000	13″ ×16	360×360×50	385×257×392

使用说明 / Notices