描述 / Descriptions

SOP-8 塑封封装互补增强模式 MOS 场效应管。
Complementary Enhancement MOSFET in a SOP-8 Plastic Package.

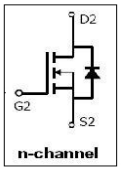
特征 / Features

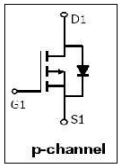
N-channel	P-channel
V_{DS}(V)=30V	V_{DS}(V)=-30V
I_D=6.9A	I_D=-6A
$R_{DS(ON)}$<28m Ω (V_{GS}=10V)	$R_{DS(ON)}$<35m Ω (V_{GS}=10V)
$R_{DS(ON)}$<42m Ω (V_{GS}=4.5V)	$R_{DS(ON)}$<58m Ω (V_{GS}=4.5V)

用途 / Applications

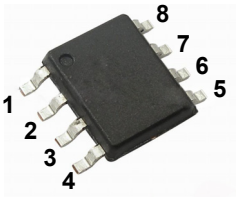
用于高功率 DC/DC 转换和功率开关。适用于作负载开关或脉宽调制应用。
These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies. This device is suitable for use as a load switch or in PWM applications.

内部等效电路 / Equivalent Circuit





引脚排列 / Pinning



PIN1：S2 PIN 2：G2 PIN 3：S1 PIN4：G1
PIN 5：D1 PIN 6：D1 PIN 7：D2 PIN 8：D2

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

参数 Parameter	符号 Symbol	数值 Rating		单位 Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DSS}	±30		V
Gate-Source Voltage	V_{GSS}	±20		V
Continuous Drain Current [A]	I_D (T_A=25℃)	6.9	-6.0	A
	I_D (T_A=70℃)	5.8	-5.0	A
Pulsed Drain Current [B]	I_{DM}	±30		A
Power Dissipation	P_D (T_A=25℃)	2		W
	P_D (T_A=70℃)	1.44		W
Maximum Junction-to-Ambient [A]	$R_{\theta JA}$(t≤10s)	62.5		℃/W
	$R_{\theta JA}$	110		℃/W
Maximum Junction-to-Lead [C]	$R_{\theta JL}$	60		℃/W
Junction and Storage Temperature Range	T_J,T_{STG}	-55 to +150		℃

Notes:

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 a 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 impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

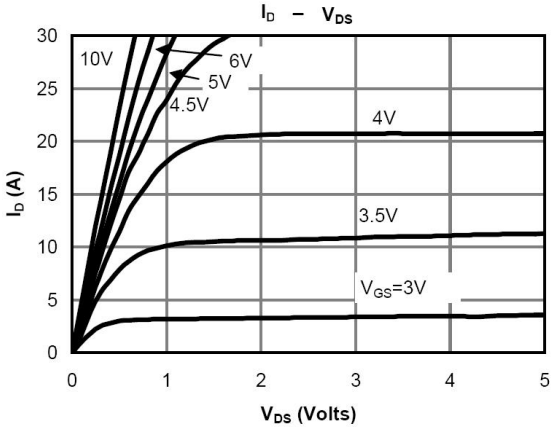
D.The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

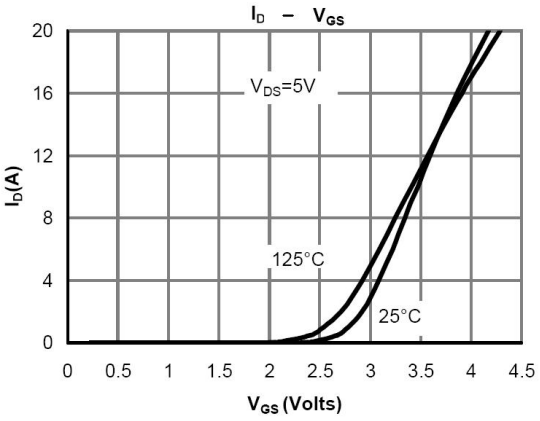
E.These tests are performed with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

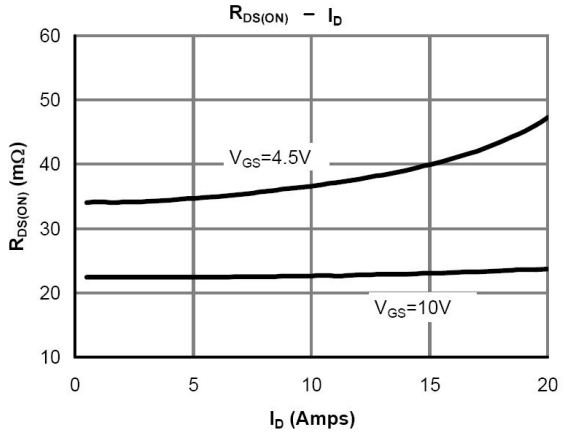
N-沟道电性能参数/N-CHANNEL Electrical Characteristics(Ta=25℃)

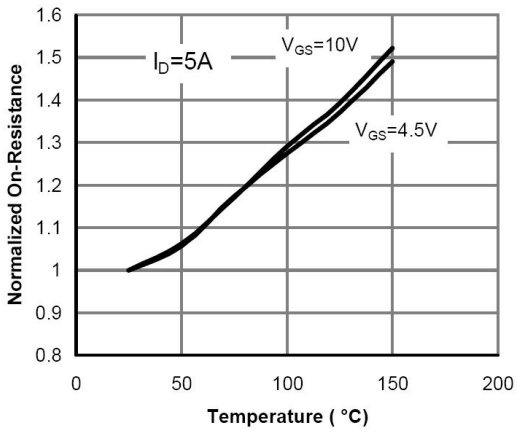
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V V_{GS}=0V			1.0	μA
		V_{DS}=24V V_{GS}=0V T_J=55℃			5.0	μA
Gate-Body leakage current	I_{GSS}	V_{GS}=±20V V_{DS}=0V			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	1.0	1.9	3.0	V
On state drain current	$I_{D(on)}$	V_{DS}=4.5V V_{GS}=5.0V	20			A
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V I_D=6.9A		22.5	28	mΩ
		V_{GS}=10V I_D=6.9A T_J=125℃		31.3	38	mΩ
		V_{GS}=4.5V I_D=5.0A		34.5	42	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5.0V I_D=6.9A	10	15.4		S
Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=1.0A		0.76	1.0	V
Maximum Body-Diode Continuous Current	I_S				3.0	A
Input Capacitance	C_{iss}	V_{DS}=15V V_{GS}=0V f=1.0MHz		680		pF
Output Capacitance	C_{oss}			102		pF
Reverse Transfer Capacitance	C_{rss}			77		pF
Gate resistance	R_g	V_{DS}=0V V_{GS}=0V f=1.0MHz		3.0		Ω
Total Gate Charge(10V)	Q_g	V_{GS}=10V V_{DS}=15V I_D=6.9A		13.84		nC
Total Gate Charge(4.5V)				6.74		nC
Gate-Source Charge	Q_{gs}			1.82		nC
Gate-Drain Charge	Q_{gd}			3.2		nC
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=15 V V_{GS}=10V R_L=2.1Ω R_{GEN}=3Ω		4.6		ns
Turn-On Rise Time	t_r			4.1		ns
Turn-Off Delay Time	$t_{d(off)}$			20.6		ns
Turn-Off Fall Time	t_f			5.2		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=6.9A dI/dt=100A/μs		16.5		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=6.9A dI/dt=100A/μs		7.8		nC

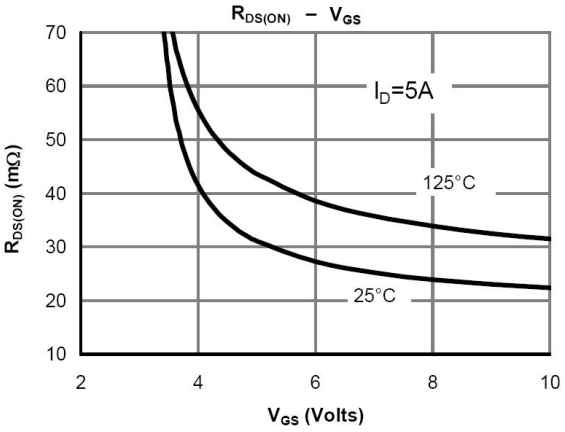
N-沟道电参数曲线图 / N-CHANNEL Electrical Characteristic Curve

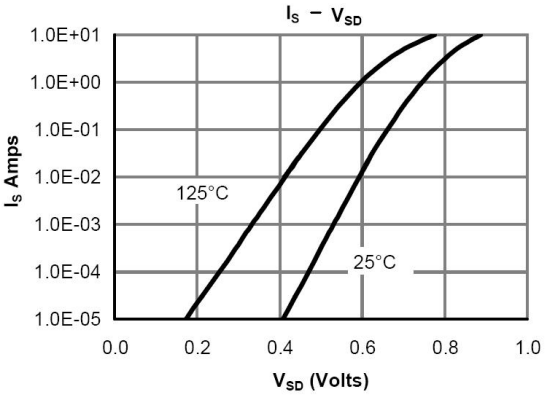




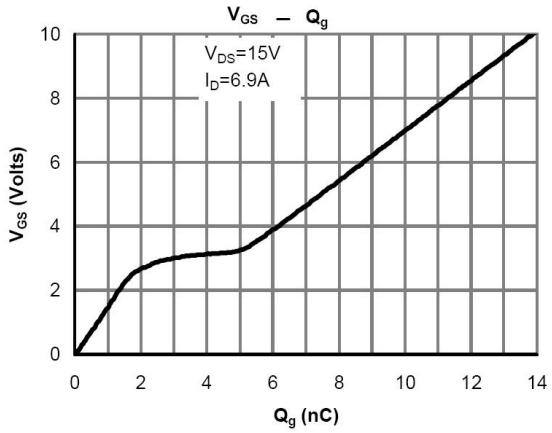


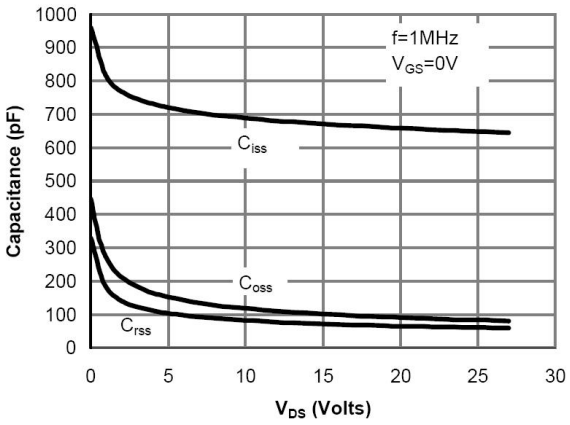


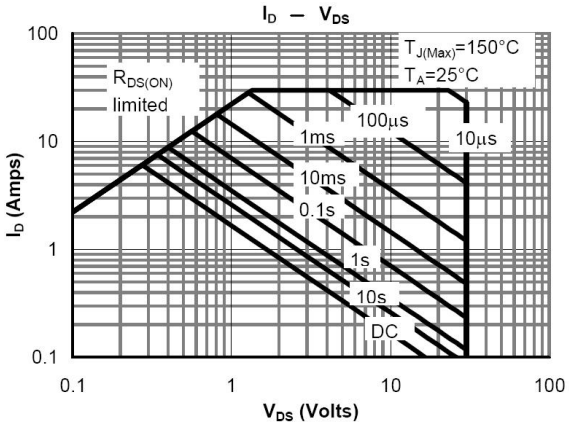


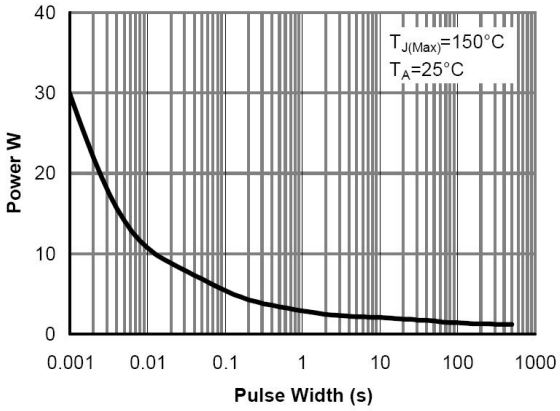


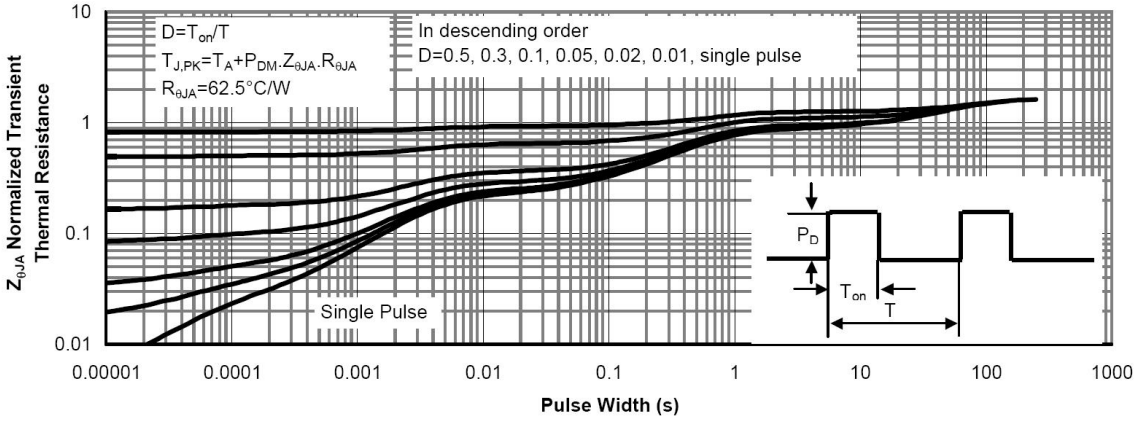
N-沟道电参数曲线图 / N-CHANNEL Electrical Characteristic Curve







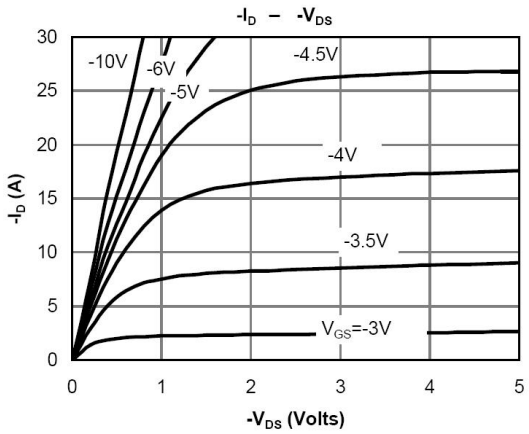


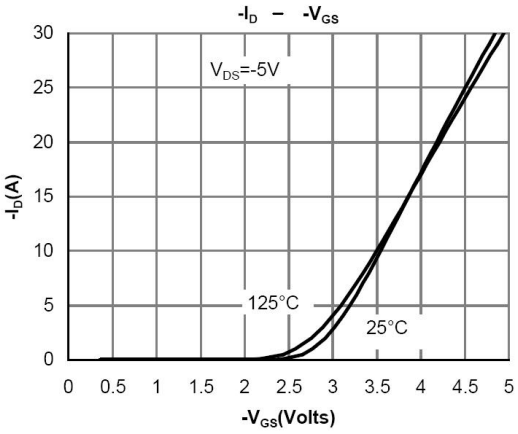


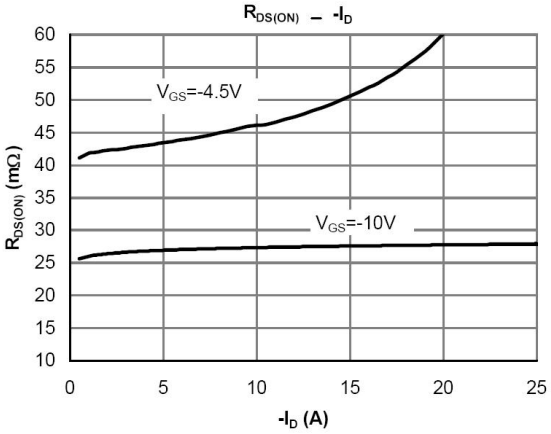
P-沟道电性能参数/P-CHANNEL Electrical Characteristics(Ta=25℃)

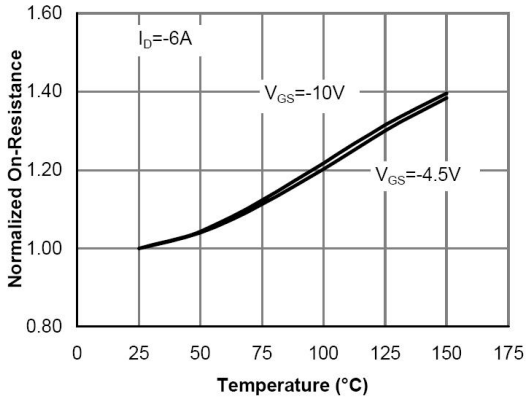
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V V_{GS}=0V			-1.0	μA
		V_{DS}=-24V V_{GS}=0V T_J=55℃			-5.0	μA
Gate-Body leakage current	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-1.2	-2.0	-2.4	V
On state drain current	$I_{D(on)}$	V_{DS}=-4.5V V_{GS}=-5.0V	30			A
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V I_D=-6.0A		28	35	mΩ
		V_{GS}=-10V I_D=-6.0A T_J=125℃		37	45	mΩ
		V_{GS}=-4.5V I_D=-5.0A		44	58	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5.0V I_D=-6.0A		13		S
Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=-1.0A		-0.76	-1.0	V
Maximum Body-Diode Continuous Current	I_S				-4.2	A
Input Capacitance	C_{iss}	V_{DS}=-15V V_{GS}=0V f=1.0MHz		920		pF
Output Capacitance	C_{oss}			190		pF
Reverse Transfer Capacitance	C_{rss}			122		pF
Gate resistance	R_g	V_{DS}=0V V_{GS}=0V f=1.0MHz		3.6		Ω
Total Gate Charge(10V)	Q_g	V_{GS}=-10V V_{DS}=-15V I_D=-6.0A		18.5		nC
Total Gate Charge(4.5V)				9.6		nC
Gate-Source Charge	Q_{gs}			2.7		nC
Gate-Drain Charge	Q_{gd}			4.5		nC
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-15 V V_{GS}=-10V R_L=2.7Ω R_{GEN}=3Ω		7.7		ns
Turn-On Rise Time	t_r			5.7		ns
Turn-Off Delay Time	$t_{d(off)}$			20.2		ns
Turn-Off Fall Time	t_f			9.5		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=-6.0A dI/dt=100A/μs		20		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-6.0A dI/dt=100A/μs		8.8		nC

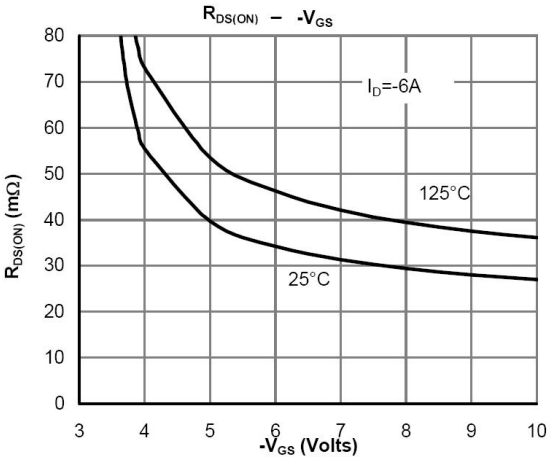
P-沟道电参数曲线图 / P-CHANNEL Electrical Characteristic Curve

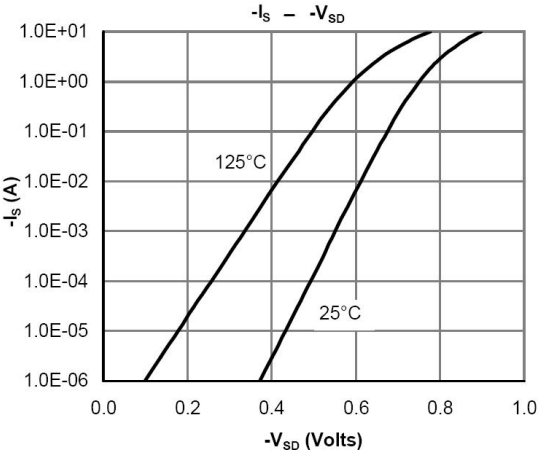




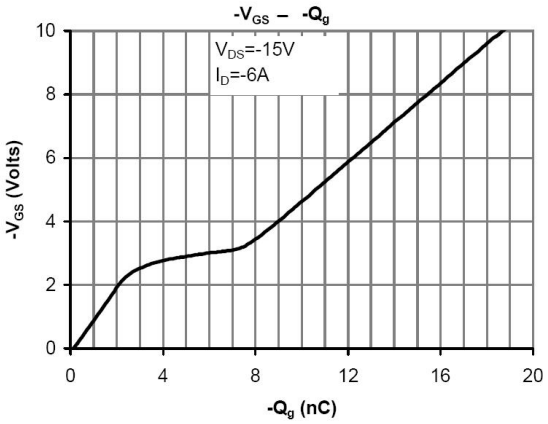


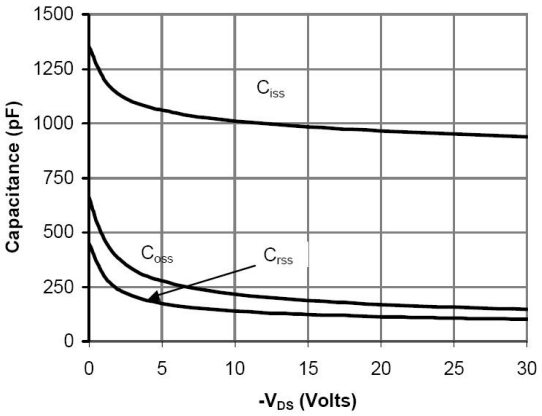


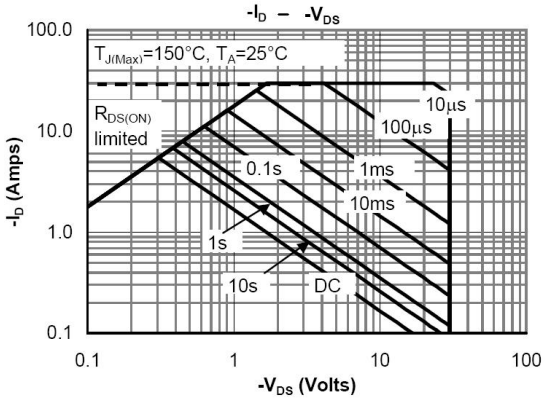


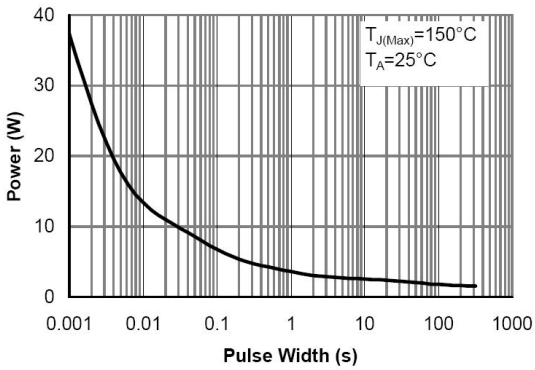


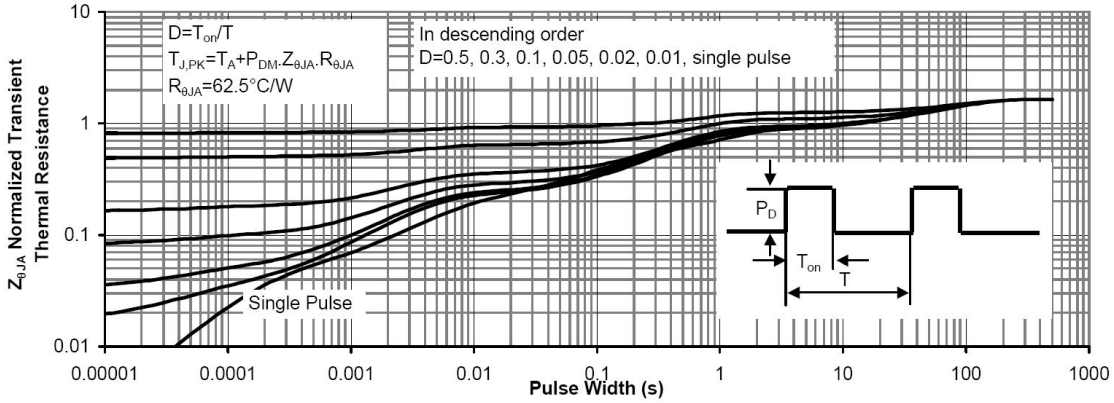
P-沟道电参数曲线图 / P-CHANNEL Electrical Characteristic Curve





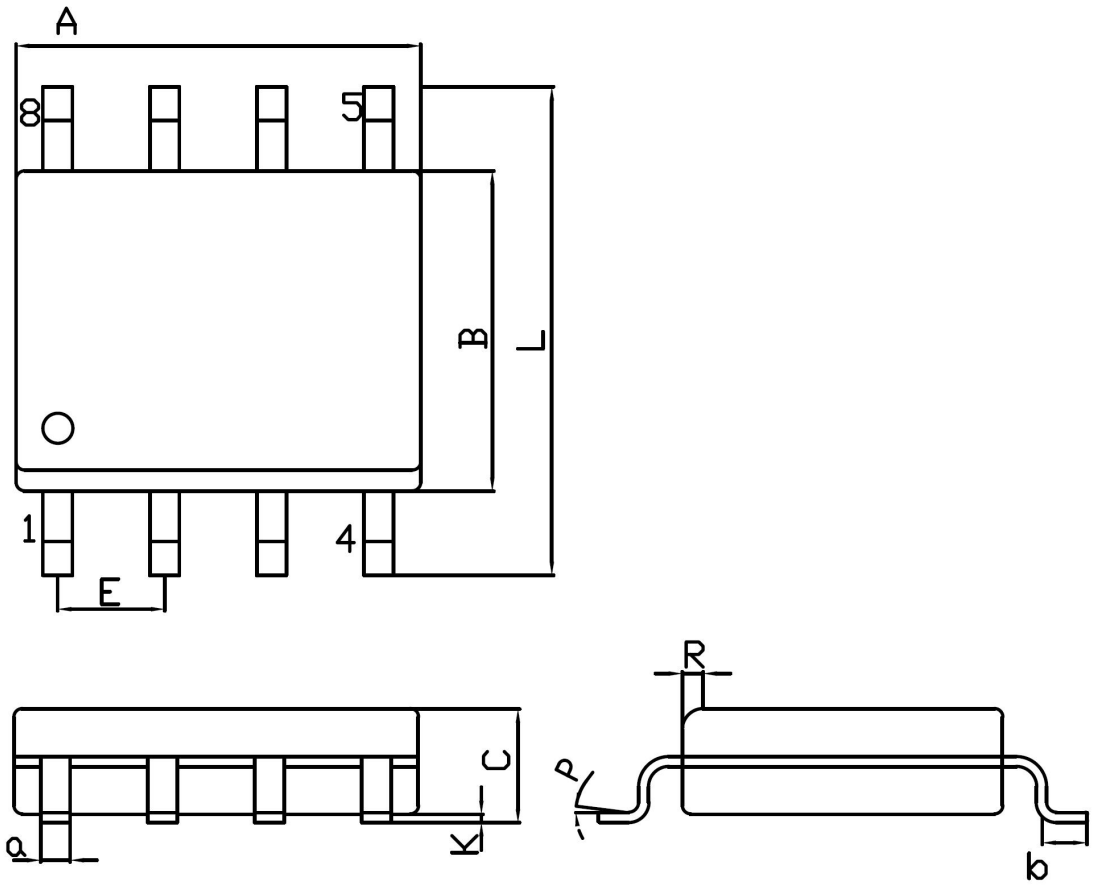






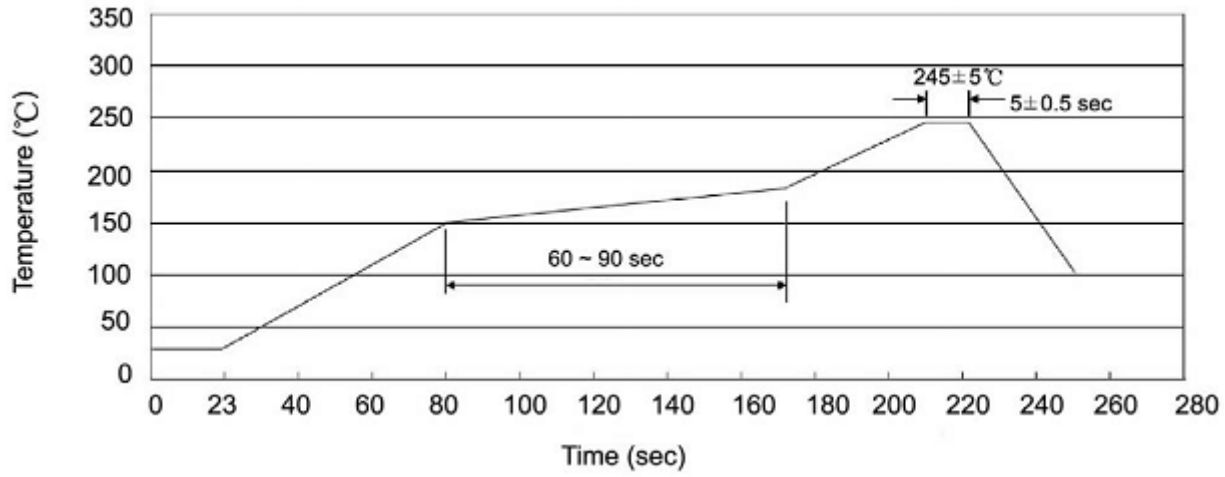
外形尺寸图 / Package Dimensions 4606

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	α	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) 4606



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