

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

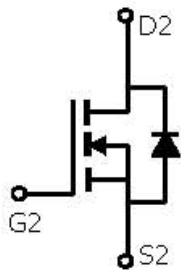
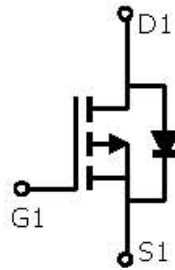
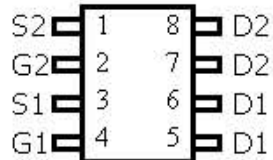
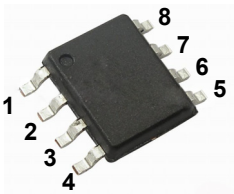
N-channel	P-channel
$V_{DS}(V)=60V$	$V_{DS}(V)=-60V$
$I_D=5.2A$	$I_D=-5.2A$
$R_{DS(ON)}<35m\ \Omega$ ($V_{GS}=10V$)	$R_{DS(ON)}<35m\ \Omega$ ($V_{GS}=-10V$)
$R_{DS(ON)}<40m\ \Omega$ ($V_{GS}=4.5V$)	$R_{DS(ON)}<40m\ \Omega$ ($V_{GS}=-4.5V$)

无卤产品。HF Product.

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. And suitable for use as a load switch or in PWM applications.

内部等效电路 / Equivalent Circuit**n-channel****p-channel****引脚排列 / Pinning****放大及印章代码 / h_{FE} Classifications & Marking**

见印章说明。See Marking Instructions.

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

参数 Parameter		符号 Symbol	数值 Rating		单位 Unit
			N-channel	P-channel	
Drain-Source Voltage		V_{DSS}	60	-60	V
Gate-Source Voltage		V_{GSS}	±20		V
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	5.2	-5.2	A
	$T_A=70^\circ\text{C}$	I_D	4	-4	A
Pulsed Drain Current		I_{DM}	20.8	-20.8	A
Power Dissipation	$T_A=25^\circ\text{C}$	P_D	2	2	W
	$T_A=70^\circ\text{C}$	P_D	1.28	1.28	W
Maximum Junction-to-Ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	62.5	62.5	$^\circ\text{C/W}$
	Steady-State	$R_{\theta JA}$	110	110	$^\circ\text{C/W}$
Maximum Junction-to-Lead	Steady-State	$R_{\theta JL}$	40	40	$^\circ\text{C/W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150		$^\circ\text{C}$

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

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}	$V_{GS}=0V$	$I_D=250\mu A$	60	65		V		
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V$	$V_{GS}=0V$			1.0	μA		
		$V_{DS}=60V$	$V_{GS}=0V$			5.0	μA		
		$T_J=55^\circ C$							
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 20V$	$V_{DS}=0V$			100	nA		
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$	$I_D=250\mu A$	1.0	1.5	3	V		
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$	$I_D=6.3A$		29.4	35	m Ω		
		$V_{GS}=4.5V$	$I_D=5.7A$		30	40	m Ω		
Forward Transconductance	g_{FS}	$V_{DS}=5.0V$	$I_D=6.3A$		13		S		
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$	$I_S=1.0A$		0.73	1.0	V		
Input Capacitance	C_{iss}				1050		pF		
Output Capacitance	C_{oss}	$V_{DS}=25V$	$V_{GS}=0V$		65		pF		
Reverse Transfer Capacitance	C_{rss}			$f=1.0MHz$		8		pF	
Gate resistance	R_g	$V_{DS}=0V$	$V_{GS}=0V$		45		Ω		
		$f=1.0MHz$							
Total Gate Charge(10V)	Q_g				47.62		nC		
Total Gate Charge(4.5V)					24.2		nC		
Gate-Source Charge	Q_{gs}	$V_{GS}=10V$	$V_{DS}=30V$		6		nC		
Gate-Drain Charge	Q_{gd}	$I_D=6.3A$			14.4		nC		
Turn-On Delay Time	$t_{d(on)}$				7.6		ns		
Turn-On Rise Time	t_r	$V_{DS}=30V$	$V_{GS}=10V$		5		ns		
Turn-Off Delay Time	$t_{d(off)}$			$R_L=4.7\Omega$	$R_{GEN}=3\Omega$		28.9		ns
Turn-Off Fall Time	t_f						5.5		ns

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

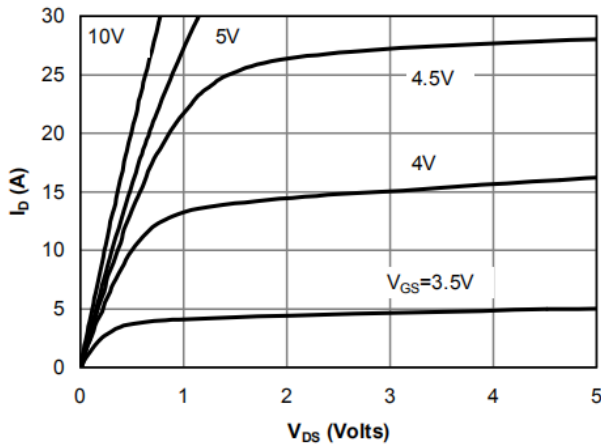


Fig 1: On-Region Characteristics

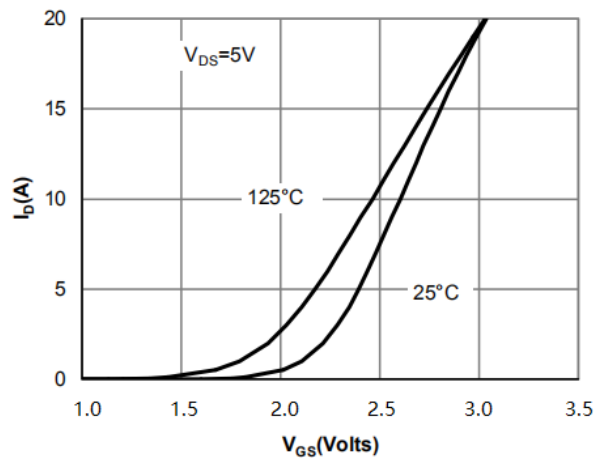


Figure 2: Transfer Characteristics

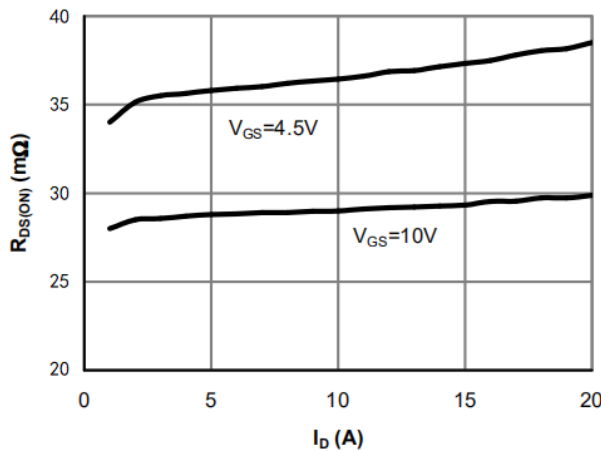


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

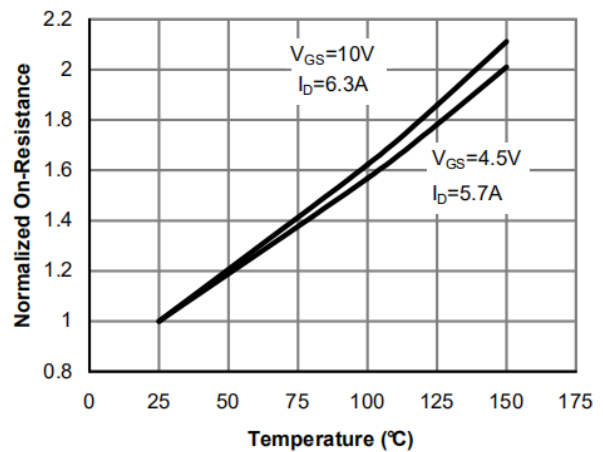


Figure 4: On-Resistance vs. Junction Temperature

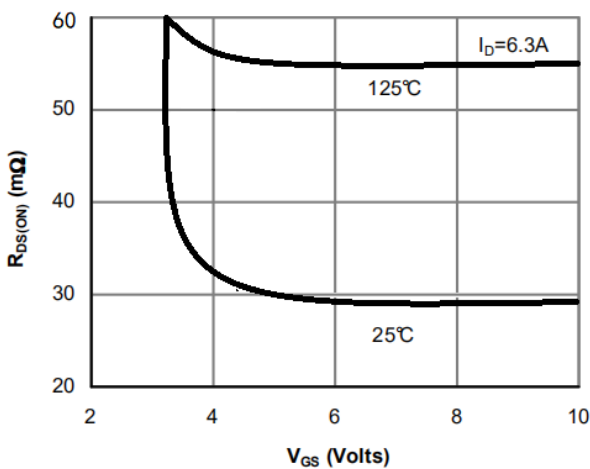


Figure 5: On-Resistance vs. Gate-Source Voltage

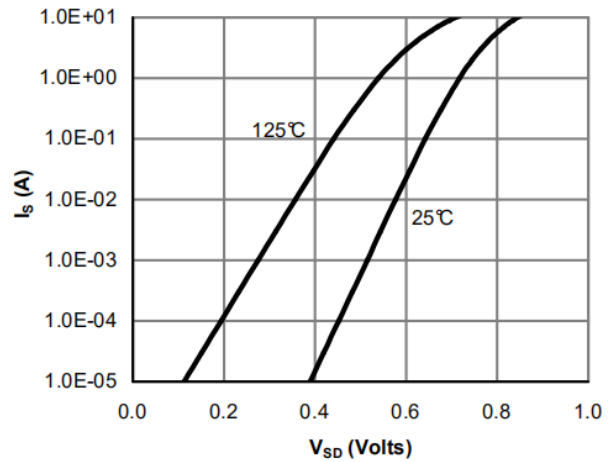


Figure 6: Body-Diode Characteristics

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

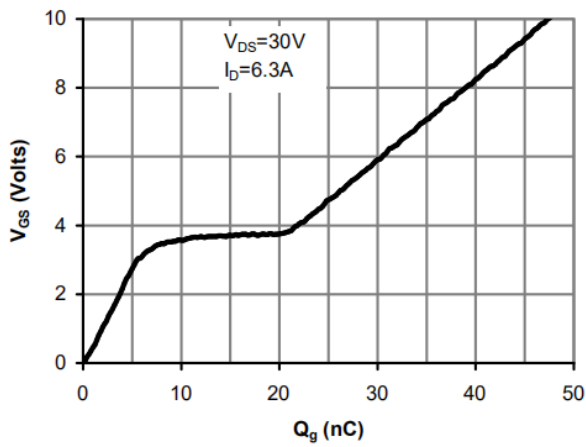


Figure 7: Gate-Charge Characteristics

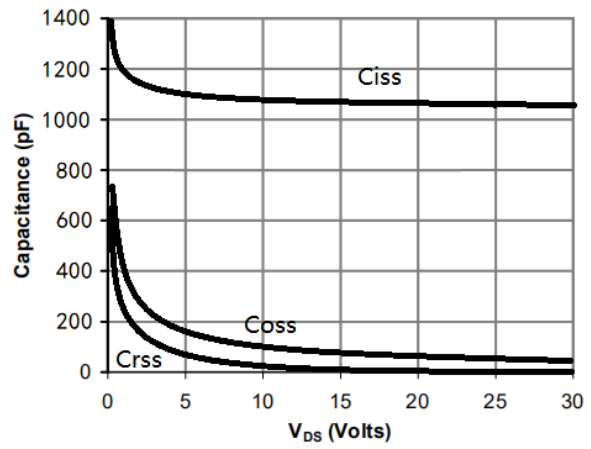


Figure 8: Capacitance Characteristics

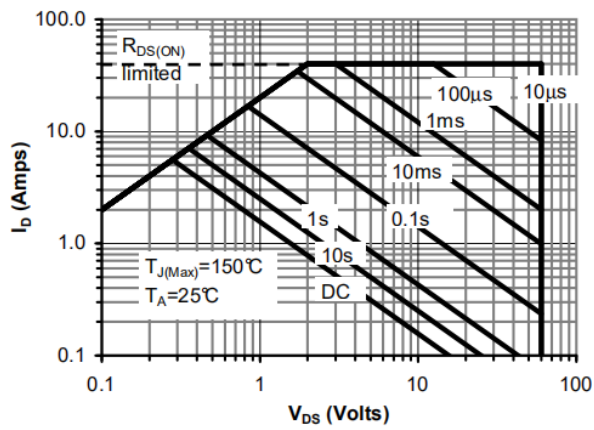


Figure 9: Maximum Forward Biased Safe Operating Area

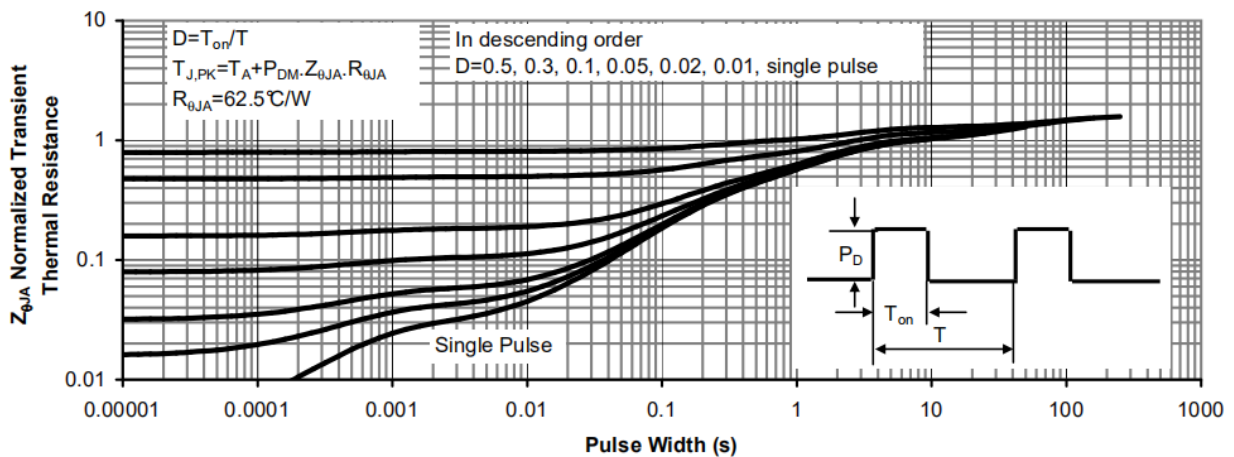


Figure 10: Normalized Maximum Transient Thermal Impedance

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

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	-60	-68		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V V _{GS} =0V			-1.0	μA
		V _{DS} =-60V V _{GS} =0V T _J =55°C			-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	-1.7	-3.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V I _D =-4.9A		23.4	35	mΩ
		V _{GS} =-4.5V I _D =-4.4A		28.5	40	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5.0V I _D =-4.9A		18		S
Diode Forward Voltage	V _{SD}	V _{GS} =0V I _S =-1.0A		-0.72	-1.0	V
Input Capacitance	C _{iss}			3750		pF
Output Capacitance	C _{oss}	V _{DS} =-25V V _{GS} =0V f=1.0MHz		215		pF
Reverse Transfer Capacitance	C _{rss}			58		pF
Gate resistance	R _g	V _{DS} =0V V _{GS} =0V f=1.0MHz		6		Ω
Total Gate Charge(10V)	Q _g	V _{GS} =-10V V _{DS} =-30V I _D =-4.9A		45.2		nC
Total Gate Charge(4.5V)				22.8		nC
Gate-Source Charge	Q _{gs}			5.8		nC
Gate-Drain Charge	Q _{gd}			9.6		nC
Turn-On Delay Time	t _{d(on)}				9.8	
Turn-On Rise Time	t _r	V _{DS} =-30V V _{GS} =-10V R _L =6.2Ω R _{GEN} =3Ω		6.1		ns
Turn-Off Delay Time	t _{d(off)}			44		ns
Turn-Off Fall Time	t _f			12.7		ns

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

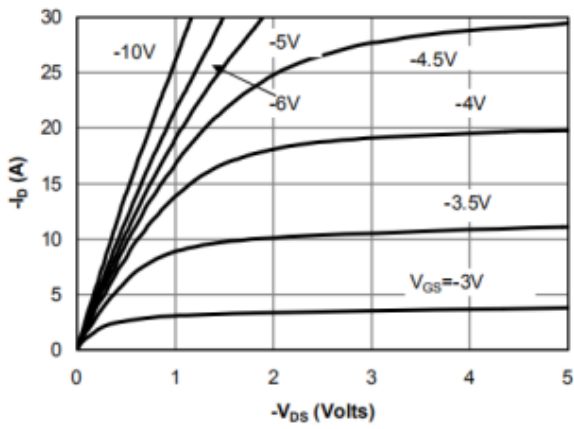


Fig 1: On-Region Characteristics

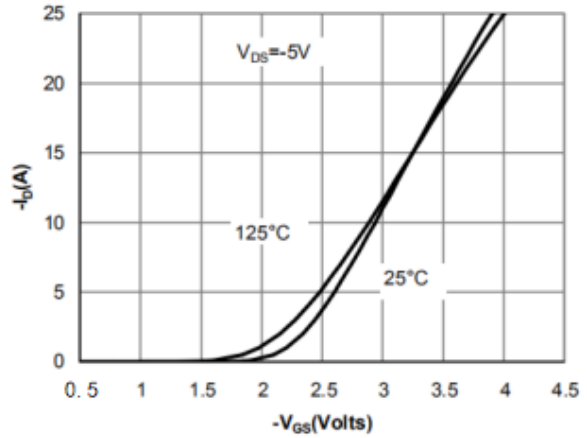


Figure 2: Transfer Characteristics

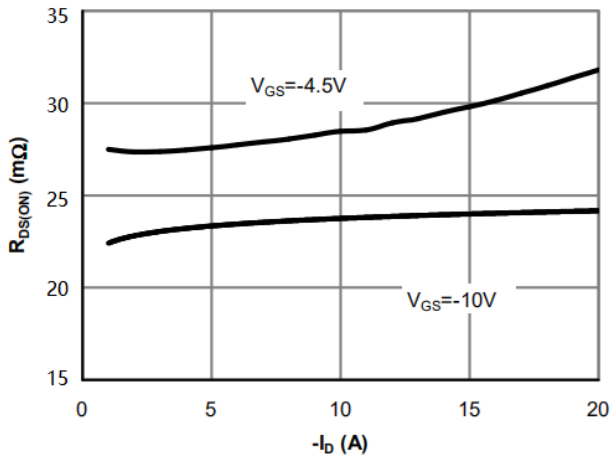


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

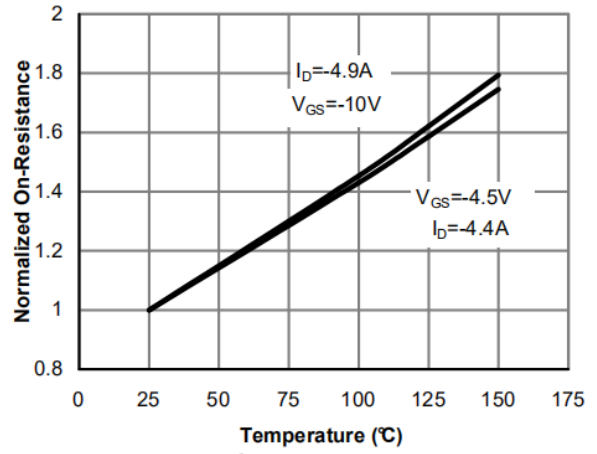


Figure 4: On-Resistance vs. Junction Temperature

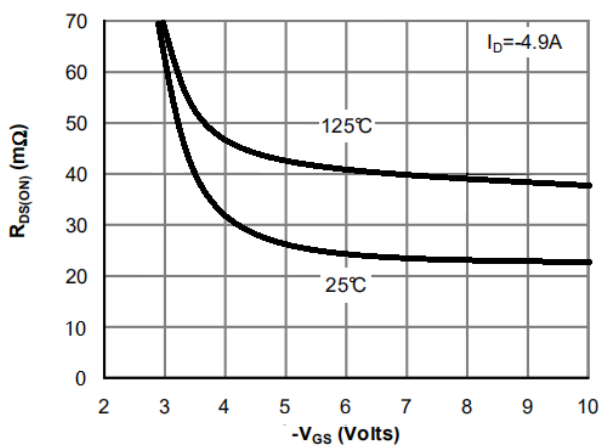


Figure 5: On-Resistance vs. Gate-Source Voltage

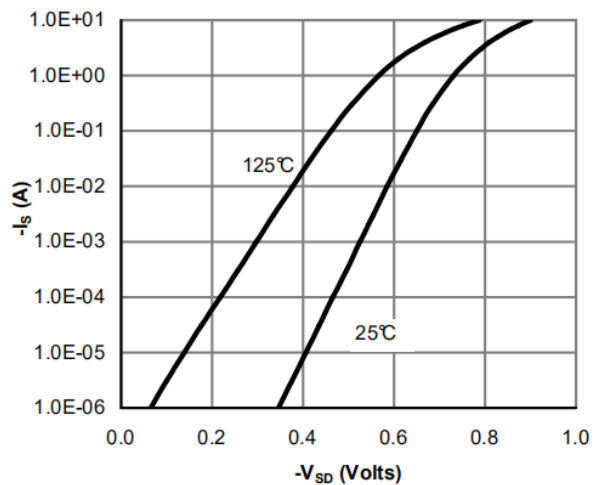


Figure 6: Body-Diode Characteristics

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

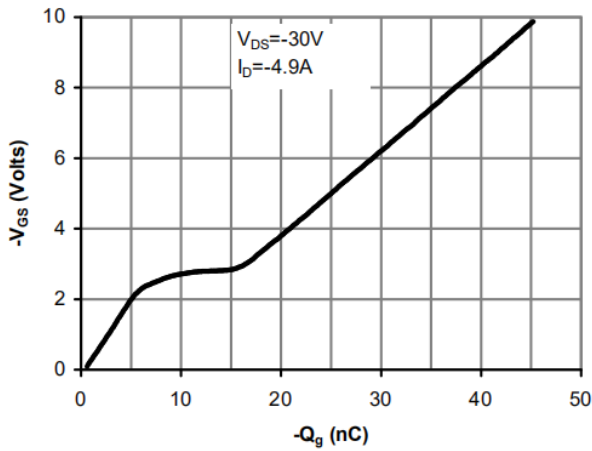


Figure 7: Gate-Charge Characteristics

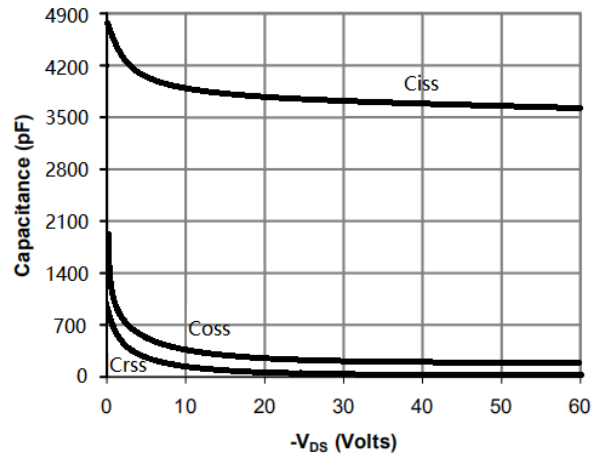


Figure 8: Capacitance Characteristics

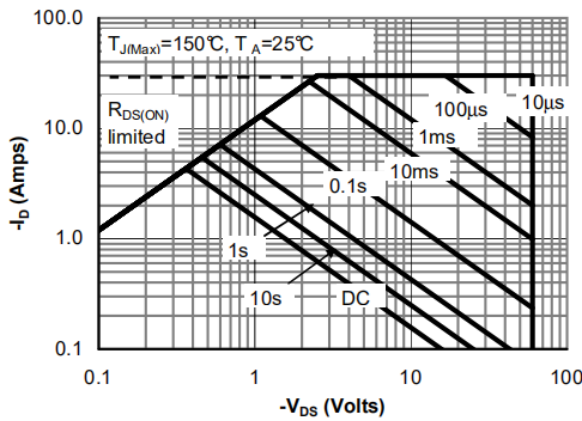


Figure 9: Maximum Forward Biased Safe Operating Area

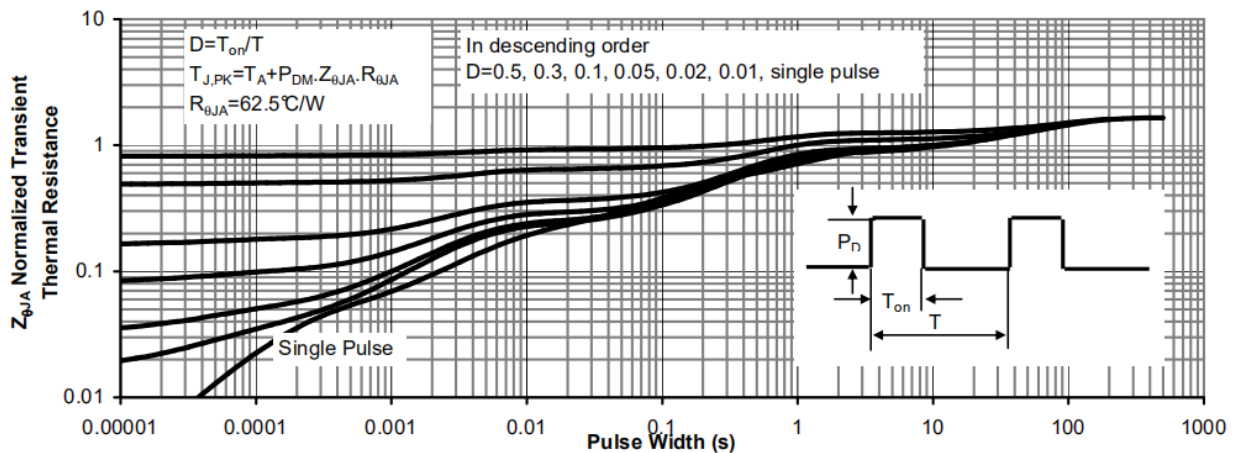
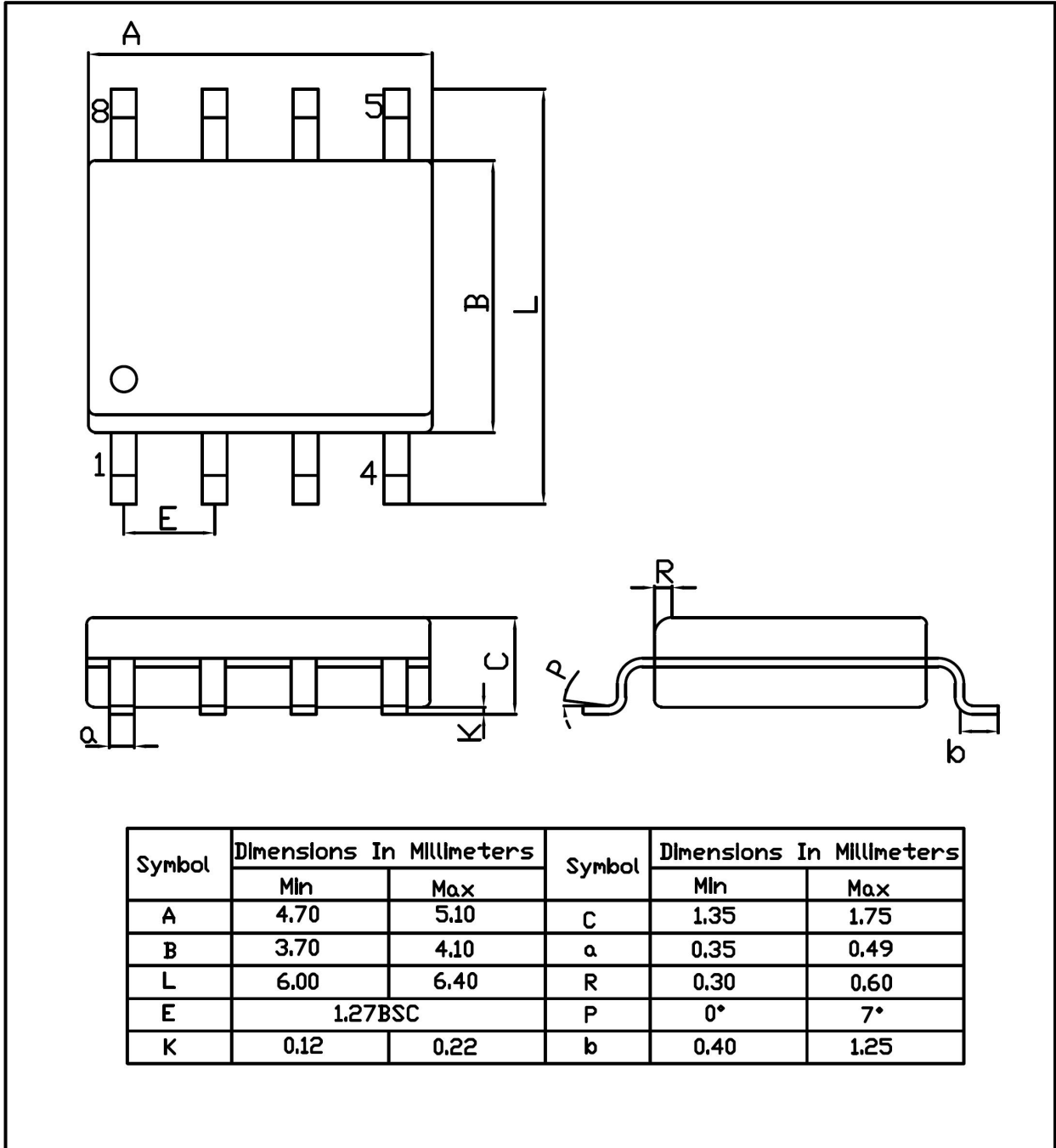


Figure 10: Normalized Maximum Transient Thermal Impedance

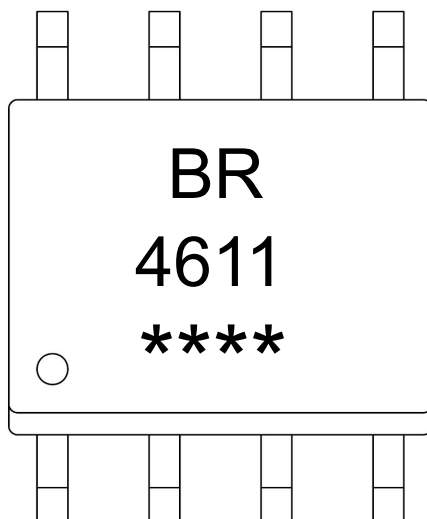
外形尺寸图 / Package Dimensions

SOP-8

Unit:mm



印章说明 / Marking Instructions



说明：

BR： 为公司代码

4611： 为型号代码

****： 为生产批号代码，随生产批号变化。

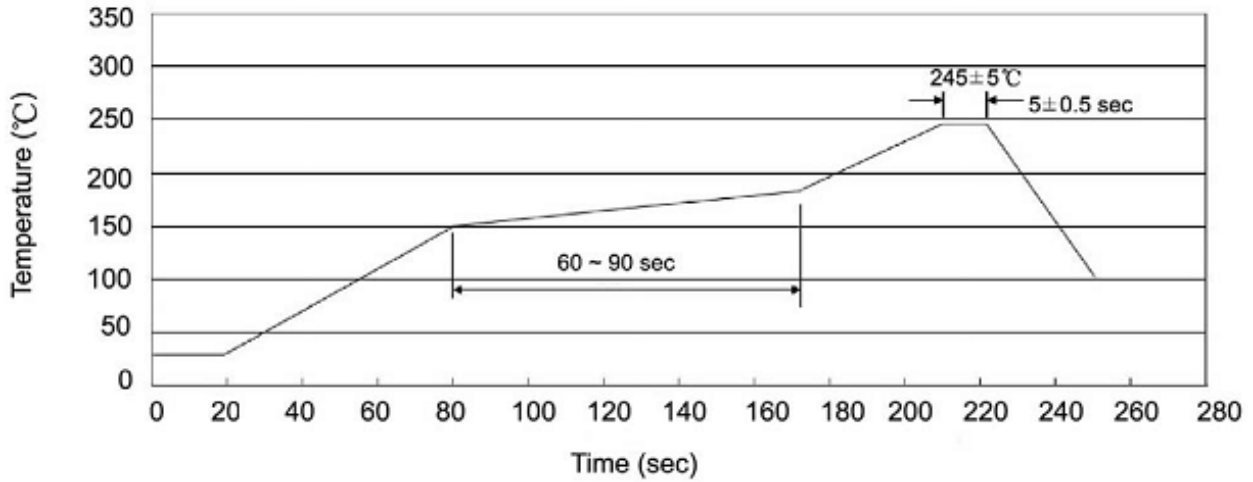
Note:

BR: Company Code.

4611: Product Type.

****: Lot No. Code, code change with Lot No.

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 150 ~ 180°C，时间 60 ~ 90sec；
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec；
- 3、焊接制程冷却速度为 2 ~ 10°C/sec.

Note:

- 1.Preheating:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

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

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

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	6	48,000	13" ×12	360×360×50	380×335×366

使用说明 / Notices