

MMDT5541

Rev.A Jul.-2016

描述 / Descriptions

SOT-363 塑封封装 PNP+NPN 半导体三极管。

Silicon PNP and NPN transistor in a SOT-363 Plastic Package.

特征 / Features

高 h_{FE} , 低 $V_{CE(sat)}$ 。

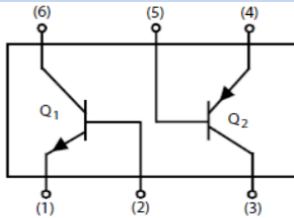
High DC Current Gain, Low Collector to Emitter Saturation Voltage.

用途 / Applications

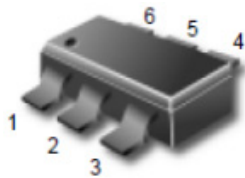
用于普通放大及开关。

General purpose amplifier and switching.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN 1、4 : Emitter

PIN 2、5 : Base

PIN 3、6 : Collector

放大及印章代码 / h_{FE} Classifications & Marking

See Marking Instructions.

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

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	180	V
Collector to Emitter Voltage	V_{CEO}	160	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	600	mA
Base Current	I_B	300	mA
Collector Power Dissipation	P_C	500	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C

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

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	-180	V
Collector to Emitter Voltage	V_{CEO}	-160	V
Emitter to Base Voltage	V_{EBO}	-6.0	V
Collector Current	I_C	-600	mA
Base Current	I_B	-300	mA
Collector Power Dissipation	P_C	300	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C

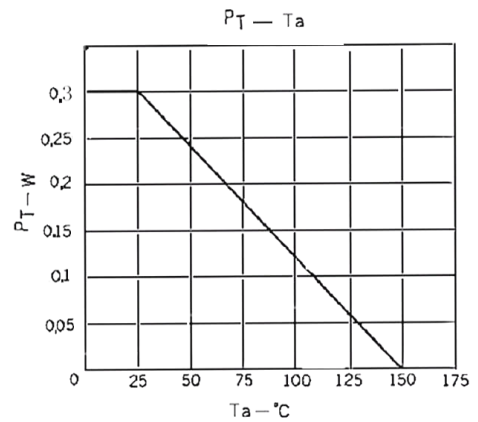
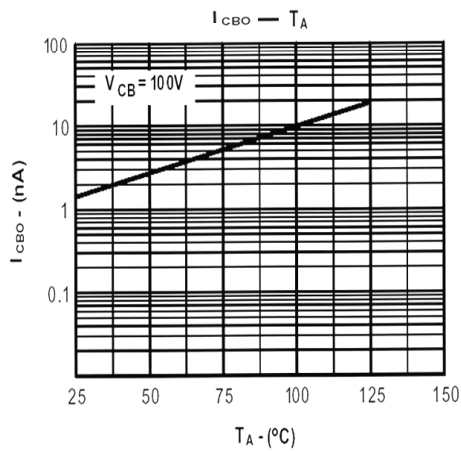
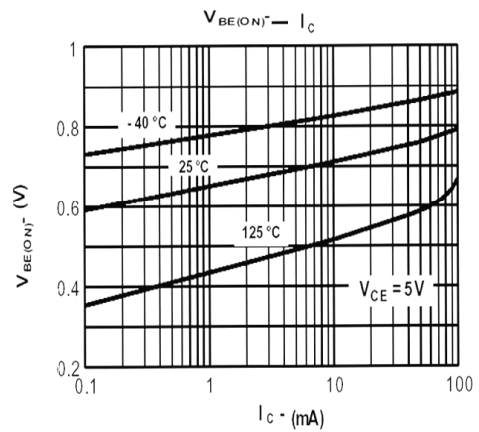
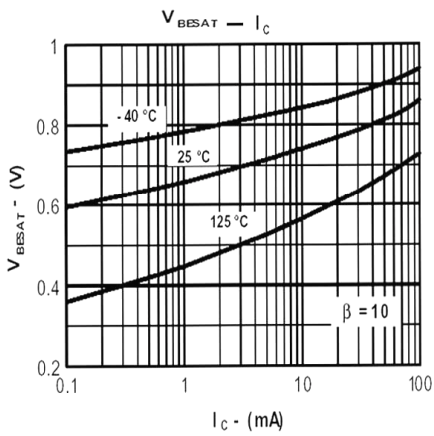
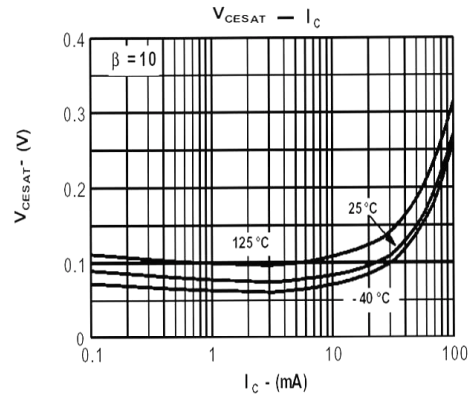
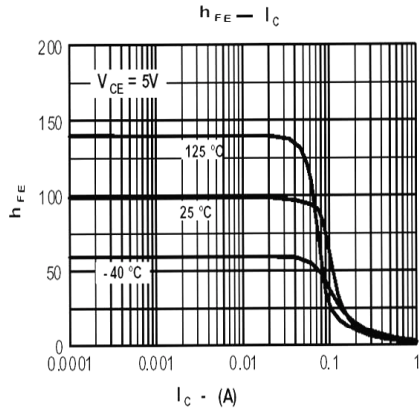
电性能参数 / Electrical Characteristics(Ta=25°C) (NPN)

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
Collector Cut-Off Current	I_{CBO}	$V_{CB}=180V$ $I_E=0$			0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=6.0V$ $I_C=0$			0.1	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=5.0V$ $I_C=10mA$	50	200	400	
	$h_{FE(2)}$	$V_{CE}=5.0V$ $I_C=50mA$	20	160		
	$h_{FE(3)}$	$V_{CE}=5.0V$ $I_C=1.0mA$	40	190		
Collector-Emitter Saturation Voltage	$V_{CE(sat)(1)}$	$I_C=10mA$ $I_B=1.0mA$		0.06	0.15	V
	$V_{CE(sat)(2)}$	$I_C=50mA$ $I_B=5.0mA$		0.09	0.3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)(1)}$	$I_C=10mA$ $I_B=1.0mA$		0.7	1.0	V
	$V_{BE(sat)(2)}$	$I_C=50mA$ $I_B=5.0mA$		0.8	1.0	V
Base-Emitter Voltage	V_{BE}	$V_{CE}=5.0V$ $I_C=10mA$		0.68	0.75	V
Transition Frequency	f_T	$V_{CE}=10V$ $I_C=10mA$	50	110		MHz
Collector Output Capacitance	C_{ob}	$V_{CB}=10V$ $I_E=0$ $f=1.0MHz$		2.2	5.0	pF
Turn-on Time	t_{on}	$I_C=100mA$ $I_{B1}=-I_{B2}=10mA$		0.3		μs
Turn-off Time	t_{off}			0.4		μs
Storage Time	t_{stg}			0.2		μs

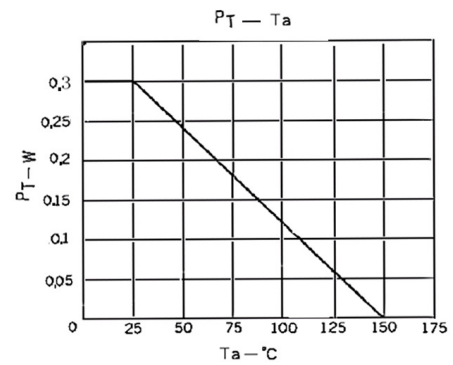
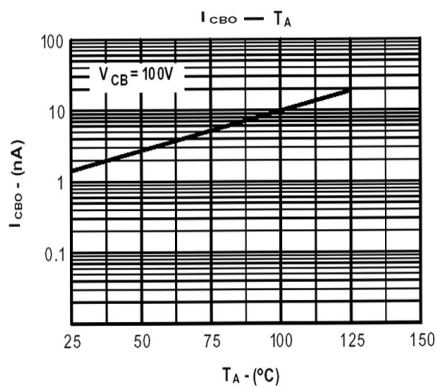
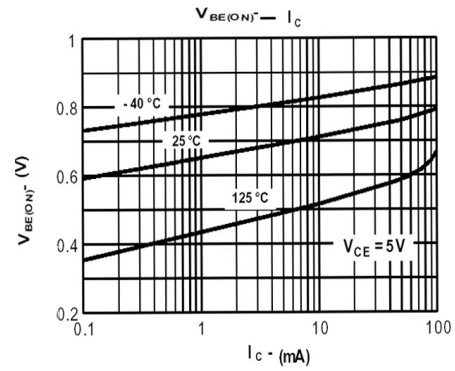
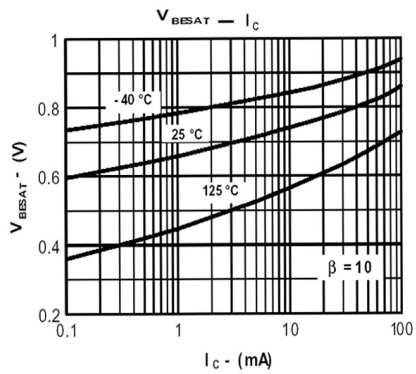
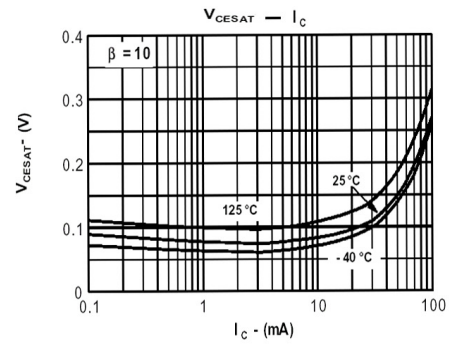
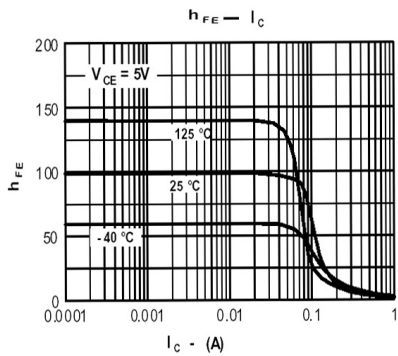
电性能参数 / Electrical Characteristics(Ta=25°C) (PNP)

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
Collector Cut-Off Current	I_{CBO}	$V_{CB}=-180V$ $I_E=0$			-0.1	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=-6.0V$ $I_C=0$			-0.1	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=-5.0V$ $I_C=-10mA$	50	200	400	
	$h_{FE(2)}$	$V_{CE}=-5.0V$ $I_C=-50mA$	20	70		
	$h_{FE(3)}$	$V_{CE}=-5.0V$ $I_C=-1.0mA$	40	180		
Collector-Emitter Saturation Voltage	$V_{CE(sat)(1)}$	$I_C=-10mA$ $I_B=-1.0mA$		-0.12	-0.4	V
	$V_{CE(sat)(2)}$	$I_C=-50mA$ $I_B=-5.0mA$		-0.5	-0.8	V
Base-Emitter Saturation Voltage	$V_{BE(sat)(1)}$	$I_C=-10mA$ $I_B=-1.0mA$		-0.75	-1.0	V
	$V_{BE(sat)(2)}$	$I_C=-50mA$ $I_B=-5.0mA$		-0.8	-1.0	V
Base-Emitter Voltage	V_{BE}	$V_{CE}=-5.0V$ $I_C=-10mA$		-0.7	-0.75	V
Transition Frequency	f_T	$V_{CE}=-10V$ $I_C=-10mA$	50	80		MHz
Collector Output Capacitance	C_{ob}	$V_{CB}=-10V$ $I_E=0$ $f=10MHz$		2.5	5.0	pF
Turn-on Time	t_{on}	$I_C=-100mA$ $-I_{B1}=I_{B2}=-10mA$		0.1		μs
Storage Time	t_{off}			0.2		μs
Fall Time	t_{stg}			0.1		μs

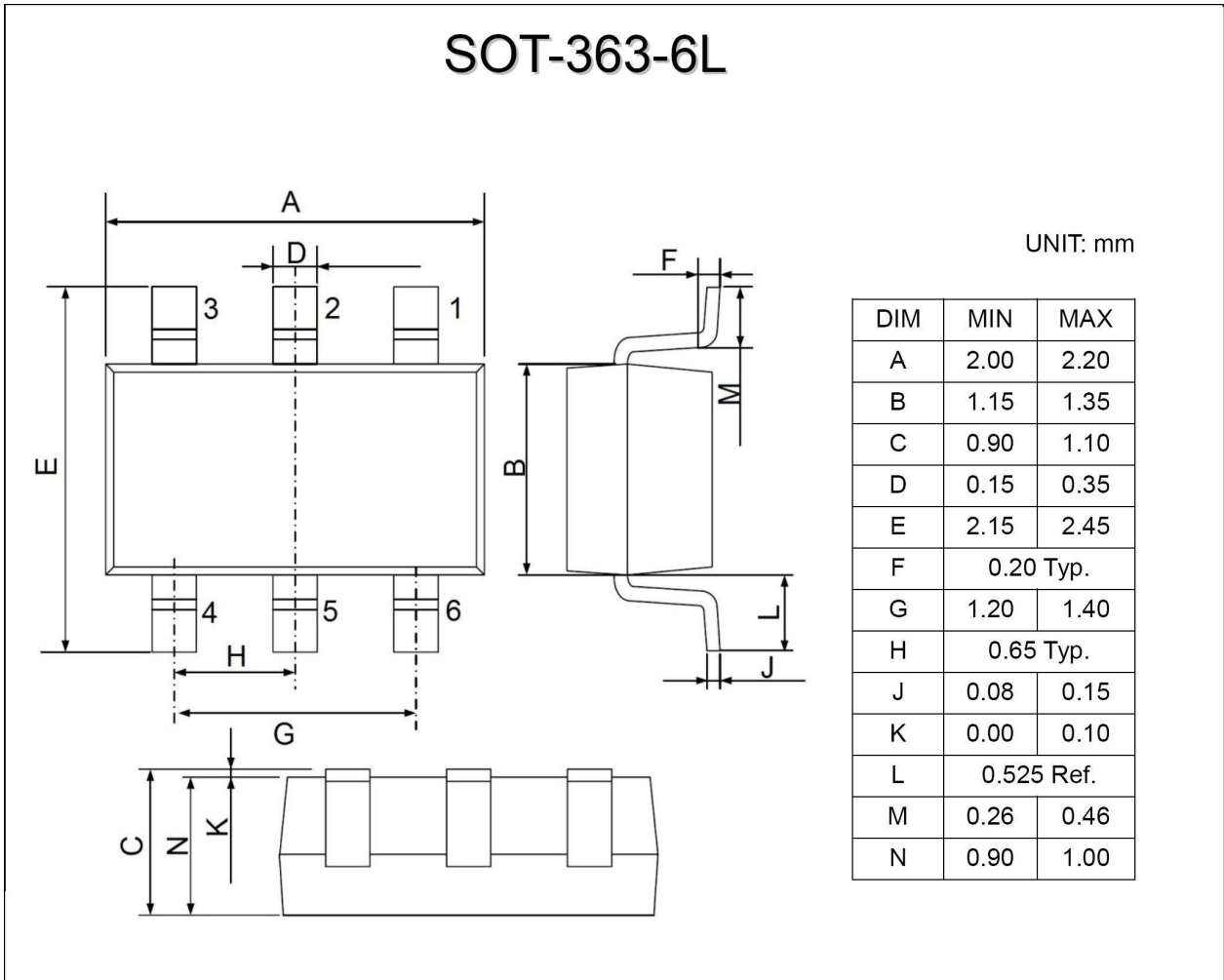
电参数曲线图 / Electrical Characteristic Curve (NPN)



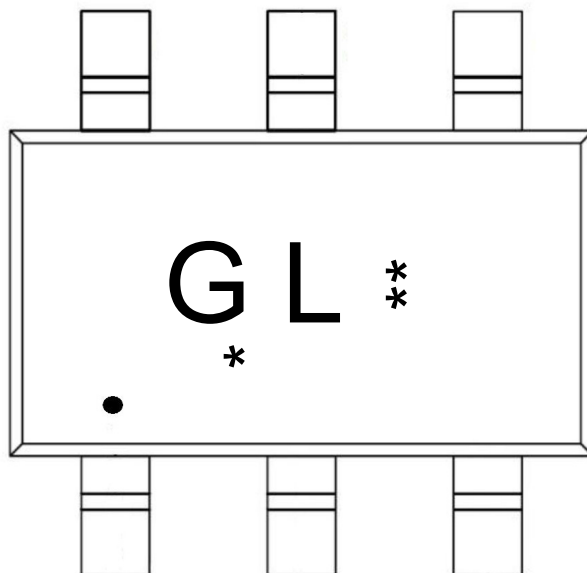
电参数曲线图 / Electrical Characteristic Curve (PNP)



外形尺寸图 / Package Dimensions



印章说明 / Marking Instructions



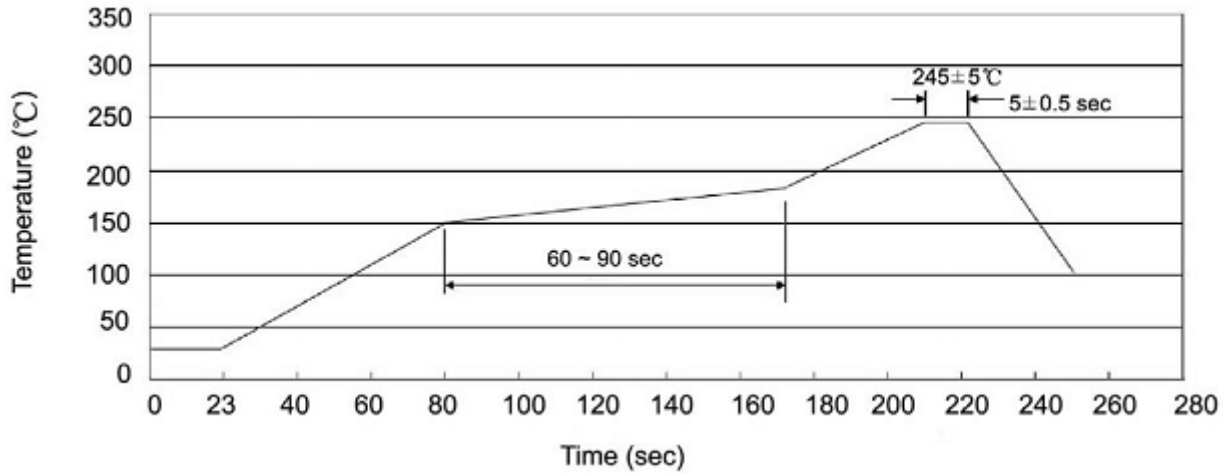
说明：

- ： 为“1”脚
- GL： 为型号代码
- ***： 为生产批号代码，随生产批号变化

Note:

- ： "1" Pin
- GL： Product Type Code
- ***： 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 25~150°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:25~150°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
SOT-363	3,000	10	30,000	8	240,000	7" x8	180×120×180	385×257×392

使用说明 / Notices