

Descriptions

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

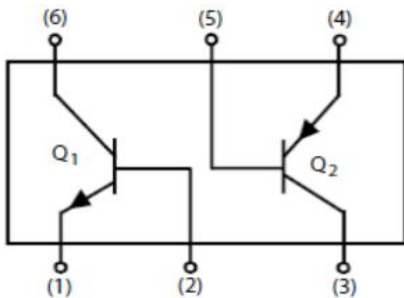
Features

- High DC Current Gaint
- Low Collector to Emitter Saturation Voltage
- Halogen-free Product

Applications

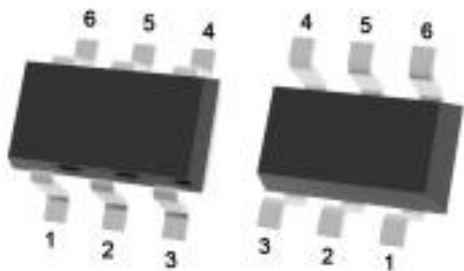
General purpose amplifier and switching

Equivalent Circuit



Q1: NPN Q2: PNP

Pinning



PIN 1、4: Emitter

PIN 2、5: Base

PIN 3、6: Collector

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	40	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
	* P_C	350	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	625	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	-40	V
Collector to Emitter Voltage	V_{CEO}	-40	V
Emitter to Base Voltage	V_{EBO}	-5.0	V
Collector Current	I_C	-200	mA
Collector Power Dissipation	P_C	300	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	625	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C

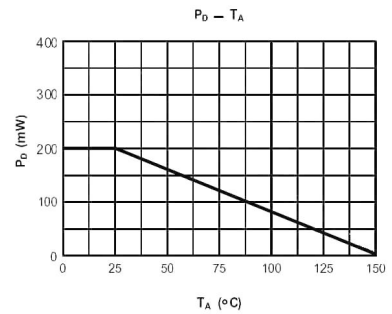
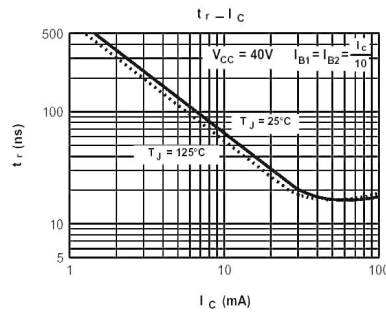
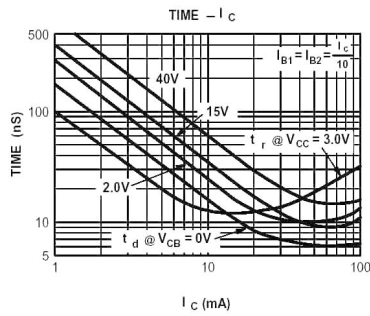
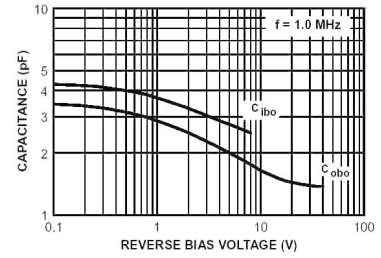
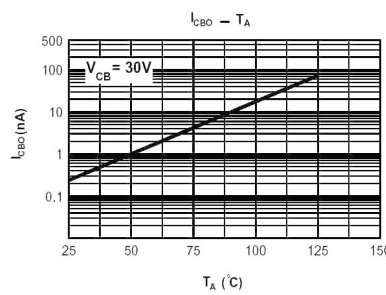
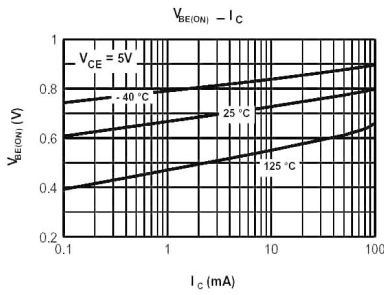
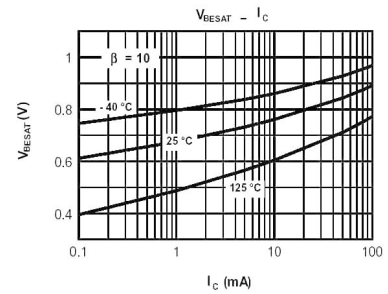
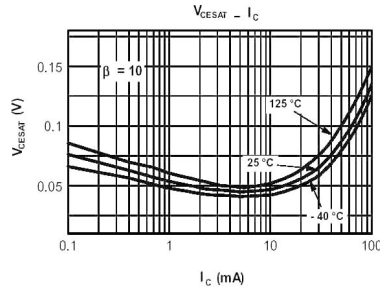
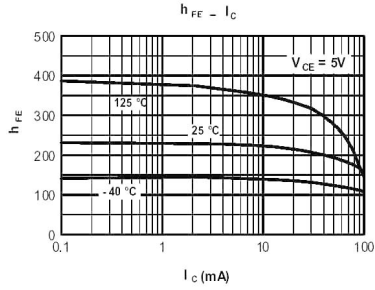
Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=10\mu A$	$I_E=0$	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	$I_C=1.0mA$	$I_B=0$	40			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=10\mu A$	$I_C=0$	6.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=30V$	$I_E=0$			0.05	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=3.0V$	$I_C=0$			0.05	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=1.0V$	$I_C=10mA$	100		300	
	$h_{FE(2)}$	$V_{CE}=1.0V$	$I_C=100mA$	30			
	$h_{FE(3)}$	$V_{CE}=1.0V$	$I_C=50mA$	60			
	$h_{FE(4)}$	$V_{CE}=1.0V$	$I_C=1.0mA$	70			
	$h_{FE(5)}$	$V_{CE}=1.0V$	$I_C=0.1mA$	40			
Collector-Emitter Saturation Voltage	$V_{CE(sat)(1)}$	$I_C=10mA$	$I_B=1.0mA$			0.2	V
	$V_{CE(sat)(2)}$	$I_C=50mA$	$I_B=5.0mA$			0.3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)(1)}$	$I_C=10mA$	$I_B=1.0mA$	0.65		0.85	V
	$V_{BE(sat)(2)}$	$I_C=50mA$	$I_B=5.0mA$			0.95	V
Transition Frequency	f_T	$V_{CE}=20V$ $f=100MHz$	$I_C=10mA$	300			MHz
Output Capacitance	C_{ob}	$V_{CB}=5.0V$	$f=1.0MHz$			4.0	pF
Storage Time	t_{stg}	$V_{CC}=3.0V$ $I_{B1}=-I_{B2}=1.0mA$	$I_C=10mA$			200	ns
Fall Time	t_f	$V_{CC}=3.0V$ $I_{B1}=-I_{B2}=1.0mA$	$I_C=10mA$			50	ns
Delay Time	t_d	$V_{CC}=3.0V$ $I_C=10mA$	$V_{BE}=0.5V$ $I_{B1}=1.0mA$			35	ns
Rise Time	t_r	$V_{CC}=3.0V$ $I_C=10mA$	$V_{BE}=0.5V$ $I_{B1}=1.0mA$			35	ns
Input Capacitance	C_{ib}	$V_{EB}=0.5V$	$f=1.0MHz$			8.0	pF

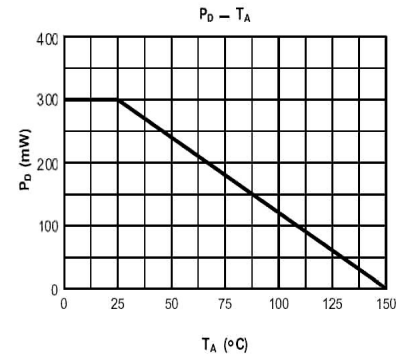
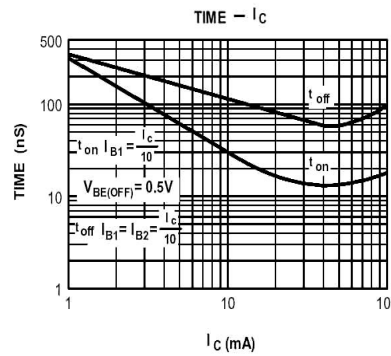
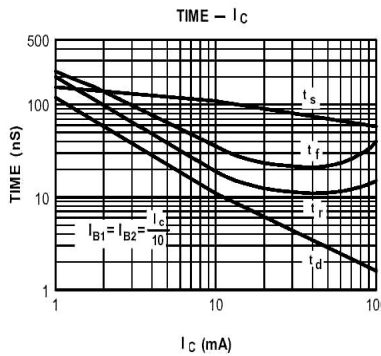
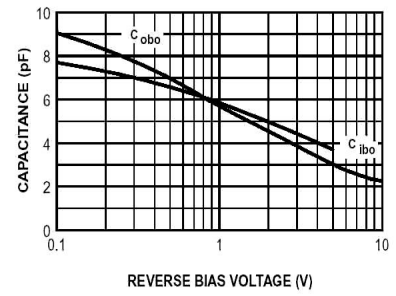
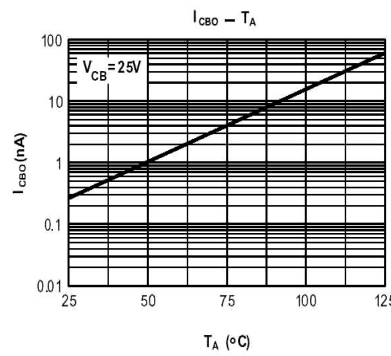
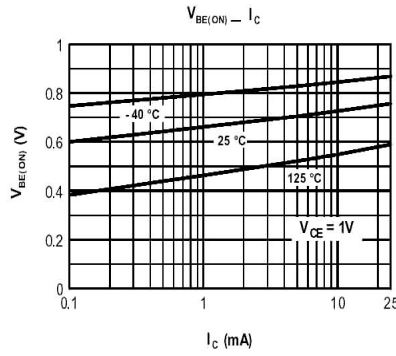
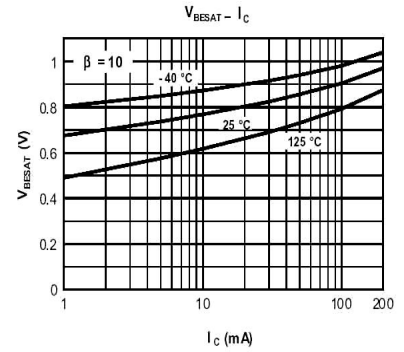
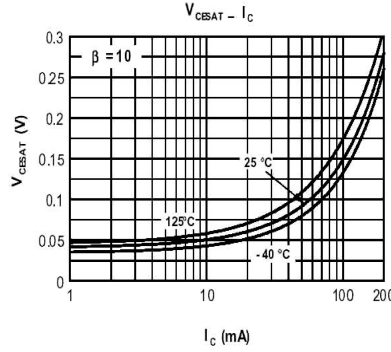
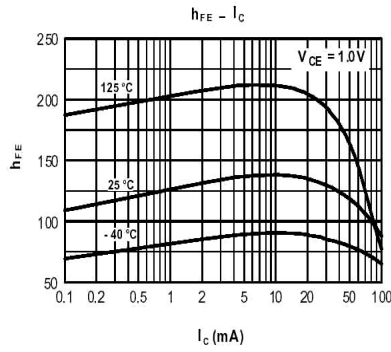
Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CB0}	$I_C=-10\mu A$ $I_E=0$	-40			V
Collector to Emitter Breakdown Voltage	V_{CEO}	$I_C=-1.0mA$ $I_B=0$	-40			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=-10\mu A$ $I_C=0$	-5.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=-30V$ $I_E=0$			-0.05	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=-3.0V$ $I_C=0$			-0.05	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=-1.0V$ $I_C=-10mA$	100		300	
	$h_{FE(2)}$	$V_{CE}=-1.0V$ $I_C=-100mA$	30			
	$h_{FE(3)}$	$V_{CE}=-1.0V$ $I_C=-50mA$	60			
	$h_{FE(4)}$	$V_{CE}=-1.0V$ $I_C=-1.0mA$	80			
	$h_{FE(5)}$	$V_{CE}=-1.0V$ $I_C=-0.1mA$	60			
Collector-Emitter Saturation voltage	$V_{CE(sat)(1)}$	$I_C=-10mA$ $I_B=-1.0mA$			-0.25	V
	$V_{CE(sat)(2)}$	$I_C=-50mA$ $I_B=-5.0mA$			-0.4	V
Base-Emitter Saturation Voltage	$V_{BE(sat)(1)}$	$I_C=-10mA$ $I_B=-1.0mA$	-0.65		-0.85	V
	$V_{BE(sat)(2)}$	$I_C=-50mA$ $I_B=-5.0mA$			-0.95	V
Transition Frequency	f_T	$V_{CE}=-20V$ $I_C=-10mA$ $f=100MHz$	250			MHz
Output Capacitance	C_{ob}	$V_{CB}=-5.0V$ $f=1.0MHz$			4.5	pF
Storage Time	t_{stg}	$V_{CC}=-3.0V$ $I_C=-10mA$ $I_{B1}=-I_{B2}=-1.0mA$			225	ns
Fall Time	t_f	$V_{CC}=-3.0V$ $I_C=-10mA$ $I_{B1}=-I_{B2}=-1.0mA$			75	ns
Delay Time	t_d	$V_{CC}=-3.0V$ $V_{BE}=-0.5V$ $I_C=-10mA$ $I_{B1}=-1.0mA$			35	ns
Rise Time	t_r	$V_{CC}=-3.0V$ $V_{BE}=-0.5V$ $I_C=-10mA$ $I_{B1}=-1.0mA$			35	ns
Input Capacitance	C_{ib}	$V_{EB}=-0.5V$ $f=1.0MHz$			10	pF

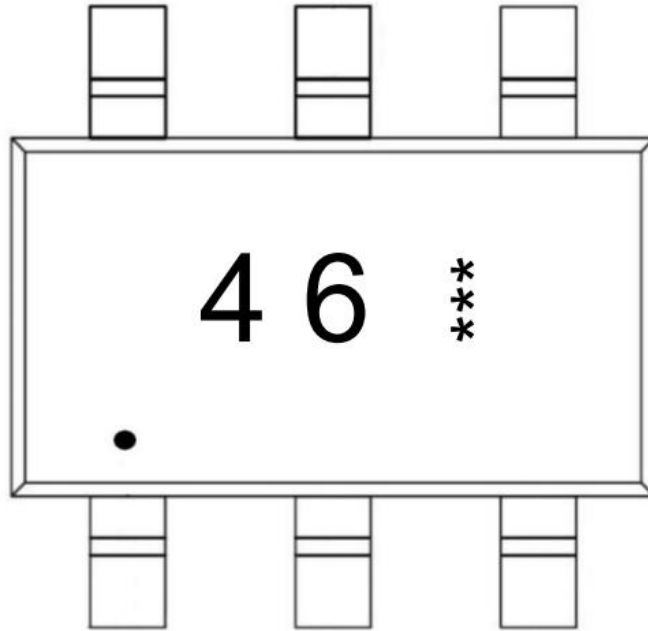
Electrical Characteristic Curve



Electrical Characteristic Curve



Marking Instructions



Note:

- : "1"Pin
- 46: Product Type Code
- ***: Lot No. Code, code change with Lot No.

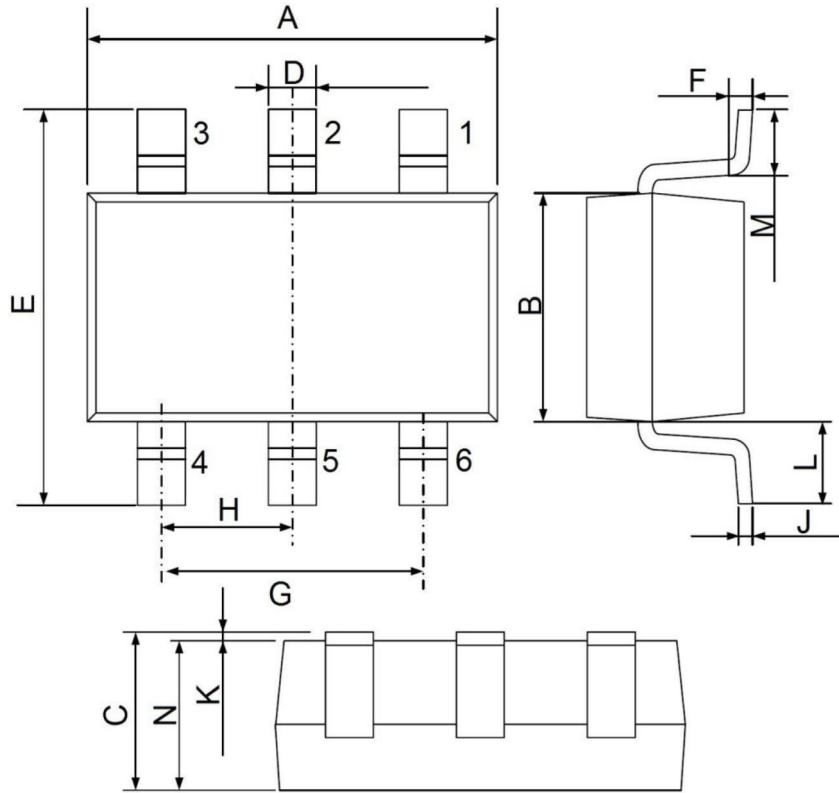
Packaging SPEC

REEL INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT-363	3,000	10	30,000	6	180,000	7" x8	180x120x180	390x385x205

Package Outline Dimensions

SOT-363-6L



UNIT: mm

DIM	MIN	MAX
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	1.95	2.25
F	0.20 Typ.	
G	1.20	1.40
H	0.65 Typ.	
J	0.08	0.15
K	0.00	0.10
L	0.525 Ref.	
M	0.26	0.46
N	0.90	1.10