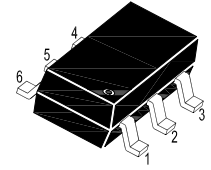
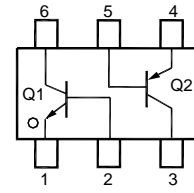


■ NPN / PNP Silicon Epitaxial Planar Transistors



1. Emitter 2. Base 3. Collector  
4. Emitter 5. Base 6. Collector

■ Simplified outline(SOT-363)

■ Q1 Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	60	V
Collector Emitter Voltage	$V_{CEO}$	40	V
Emitter Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	600	mA

■ Q2 Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	40	V
Collector Emitter Voltage	$-V_{CEO}$	40	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current	$-I_C$	600	mA

■ Q1Q2 Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

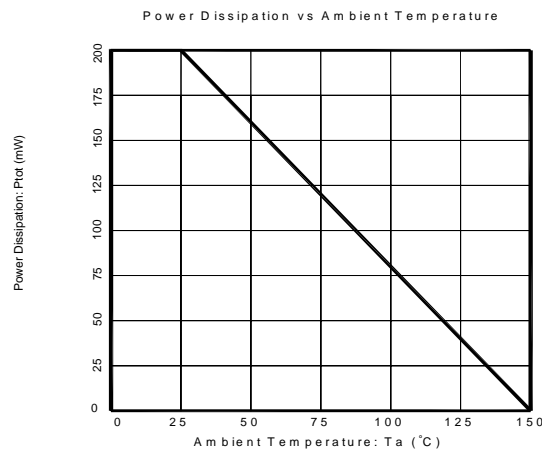
Parameter	Symbol	Value	Unit
Total Power Dissipation	$P_{tot}$	200	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

**■ Q1 Electrical Characteristics at  $T_a = 25^\circ\text{C}$** 

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 1\text{ V}$ , $I_C = 0.1\text{ mA}$	$h_{FE}$	20	-	-
at $V_{CE} = 1\text{ V}$ , $I_C = 1\text{ mA}$	$h_{FE}$	40	-	-
at $V_{CE} = 1\text{ V}$ , $I_C = 10\text{ mA}$	$h_{FE}$	80	-	-
at $V_{CE} = 1\text{ V}$ , $I_C = 150\text{ mA}$	$h_{FE}$	100	300	-
at $V_{CE} = 2\text{ V}$ , $I_C = 500\text{ mA}$	$h_{FE}$	40	-	-
Collector Cutoff Current at $V_{CB} = 35\text{ V}$	$I_{CBO}$	-	0.1	$\mu\text{A}$
Base Cutoff Current at $V_{EB} = 5\text{ V}$	$I_{EBO}$	-	0.1	$\mu\text{A}$
Collector Base Breakdown Voltage at $I_C = 0.1\text{ mA}$	$V_{(BR)CBO}$	60	-	V
Collector Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage at $I_E = 0.1\text{ mA}$	$V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage at $I_C = 150\text{ mA}$ , $I_B = 15\text{ mA}$	$V_{CEsat}$	-	0.4	V
at $I_C = 500\text{ mA}$ , $I_B = 50\text{ mA}$	$V_{CEsat}$	-	0.75	V
Base Emitter Saturation Voltage at $I_C = 150\text{ mA}$ , $I_B = 15\text{ mA}$	$V_{BEsat}$	0.75	0.95	V
at $I_C = 500\text{ mA}$ , $I_B = 50\text{ mA}$	$V_{BEsat}$	-	1.2	V
Current Gain Bandwidth Product at $V_{CE} = 10\text{ V}$ , $I_C = 20\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	250	-	MHz
Collector Base Capacitance at $V_{CB} = 5\text{ V}$ , $I_E = 0$ , $f = 1\text{ MHz}$	$C_{cb}$	-	8	pF

■ Q2 Electrical Characteristics at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $-V_{CE} = 1\text{ V}$ , $-I_C = 0.1\text{ mA}$ at $-V_{CE} = 1\text{ V}$ , $-I_C = 1\text{ mA}$ at $-V_{CE} = 1\text{ V}$ , $-I_C = 10\text{ mA}$ at $-V_{CE} = 2\text{ V}$ , $-I_C = 150\text{ mA}$ at $-V_{CE} = 2\text{ V}$ , $-I_C = 500\text{ mA}$	$h_{FE}$ $h_{FE}$ $h_{FE}$ $h_{FE}$ $h_{FE}$	30 60 100 100 20	- - - 300 -	- - - - -
Collector Cutoff Current at $-V_{CB} = 35\text{ V}$	$-I_{CBO}$	-	0.1	$\mu\text{A}$
Base Cutoff Current at $-V_{EB} = 5\text{ V}$	$-I_{EBO}$	-	0.1	$\mu\text{A}$
Collector Base Breakdown Voltage at $-I_C = 0.1\text{ mA}$	$-V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage at $-I_C = 1\text{ mA}$	$-V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage at $-I_E = 0.1\text{ mA}$	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage at $-I_C = 150\text{ mA}$ , $-I_B = 15\text{ mA}$ at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$	$-V_{CEsat}$	- -	0.4 0.75	V
Base Emitter Saturation Voltage at $-I_C = 150\text{ mA}$ , $-I_B = 15\text{ mA}$ at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$	$-V_{BEsat}$	0.75 -	0.95 1.3	V
Current Gain Bandwidth Product at $-V_{CE} = 10\text{ V}$ , $-I_C = 20\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	200	-	MHz
Collector Base Capacitance at $-V_{CB} = 10\text{ V}$ , $-I_E = 0$ , $f = 1\text{ MHz}$	$C_{cb}$	-	8.5	pF



**Q1(NPN transistor)**

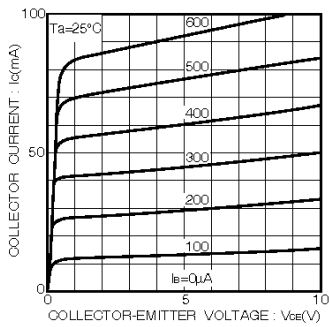


Fig.1 Grounded emitter output characteristics

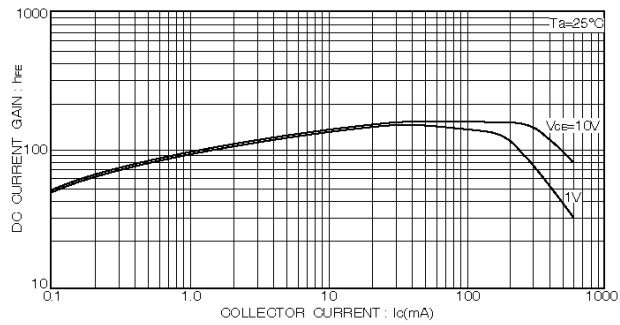


Fig.3 DC current gain vs. collector current(I)

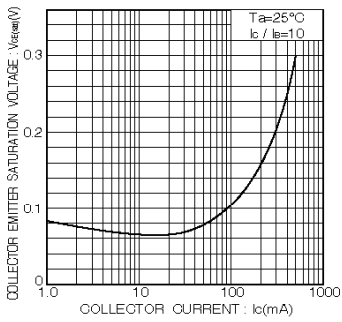


Fig.2 Collector-emitter saturation voltage vs. collector current

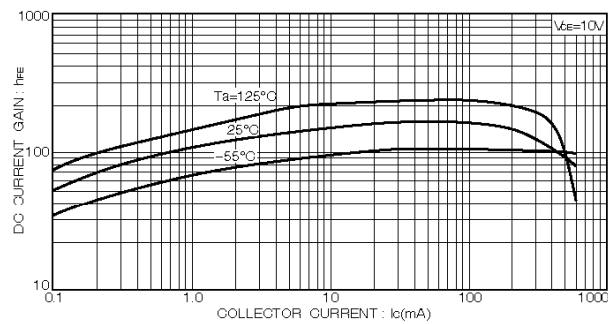


Fig.4 DC current gain vs. collector current(II)

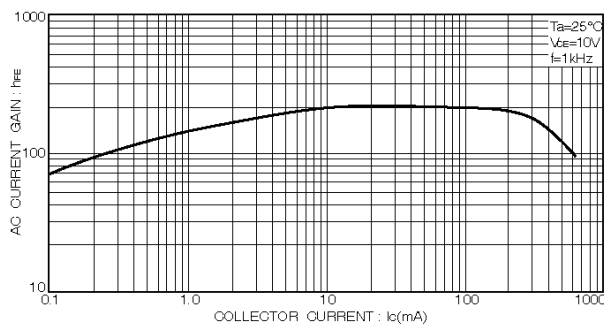


Fig.5 AC current gain vs. collector current

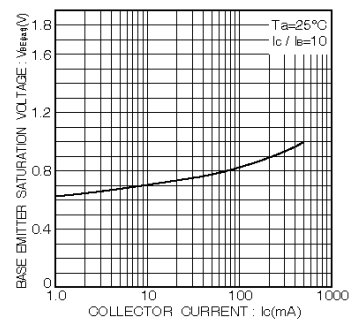


Fig.6 Base-emitter saturation voltage vs. collector current

**Q2(PNP transistor)**

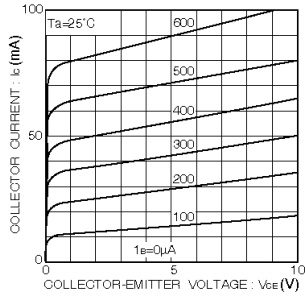


Fig.1 Grounded emitter output characteristics

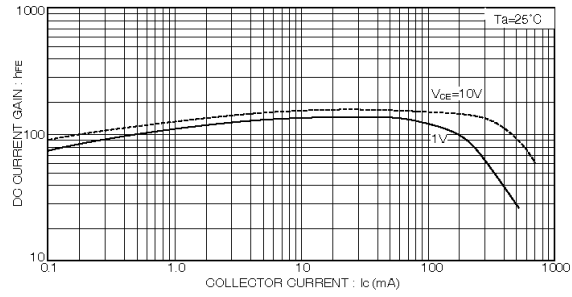


Fig.3 DC current gain vs. collector current (I)

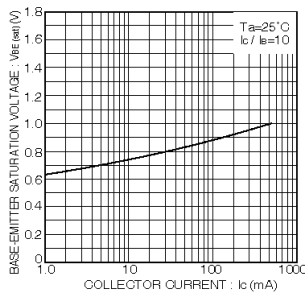


Fig.2 Base-emitter saturation voltage vs. collector current

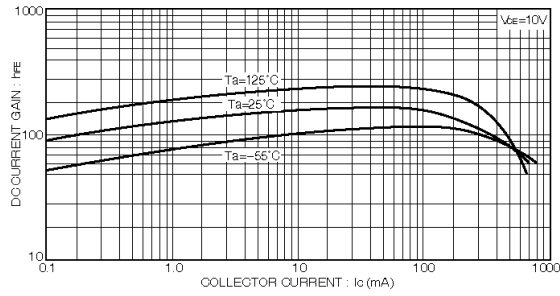


Fig.4 DC current gain vs. collector current (II)

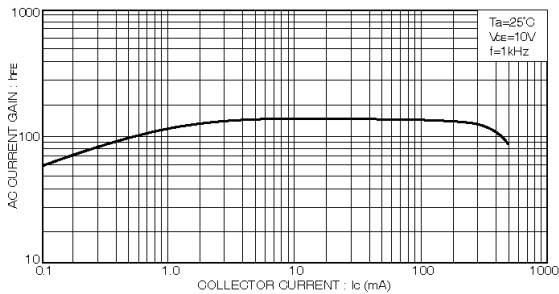


Fig.5 AC current gain vs. collector current

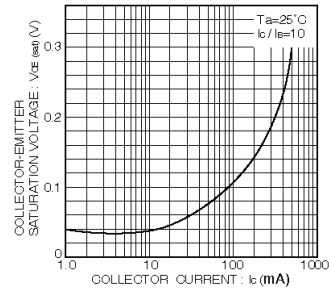
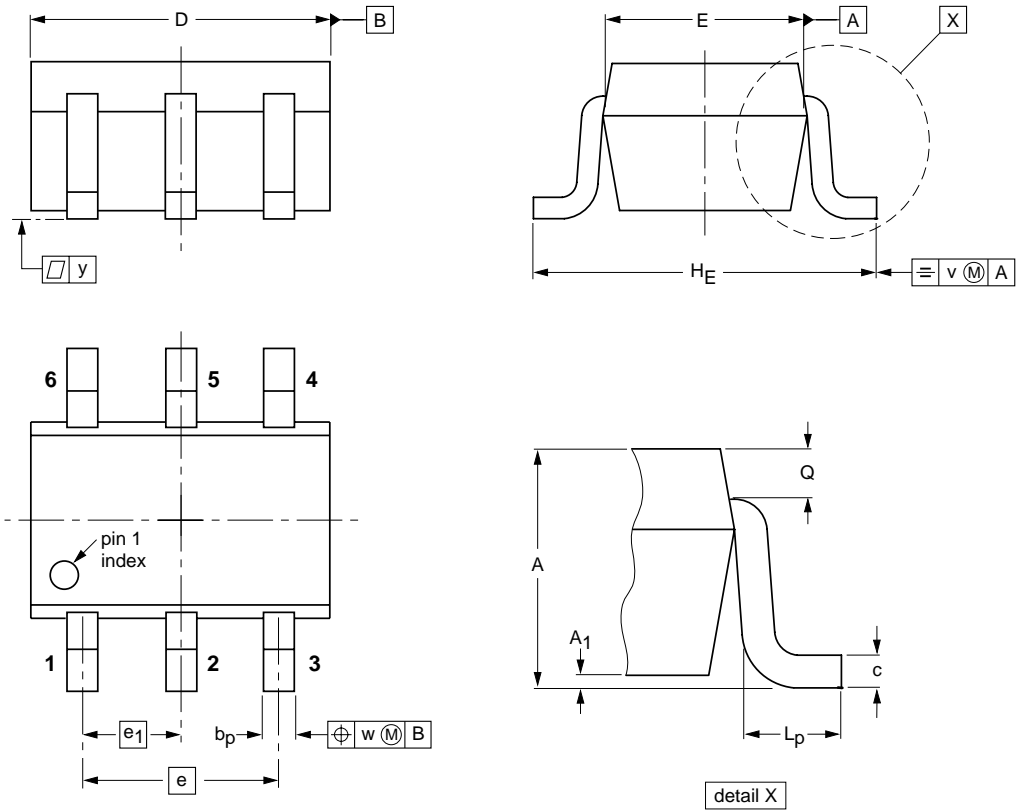


Fig.6 Collector-emitter saturation voltage vs. collector current

Package Outline

SOT-363



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w	y
mm	1.1 0.8	0.1	0.30 0.20	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.25 0.15	0.2	0.2	0.1

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT-363	Tape/Reel, 7" reel	3000	EIA-481-1