

Medium Power Transistor (−60V, −3A)

MP6T3

●Features

- 1) High speed switching. (t_f : Typ. : 20ns at $I_C = -3A$)
- 2) Low saturation voltage, typically
(Typ. : −200mV at $I_C = -2A$, $I_B = -0.2A$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Contain two 2SA2071-dies in a package.

●Applications

Low frequency amplifier
High speed switching

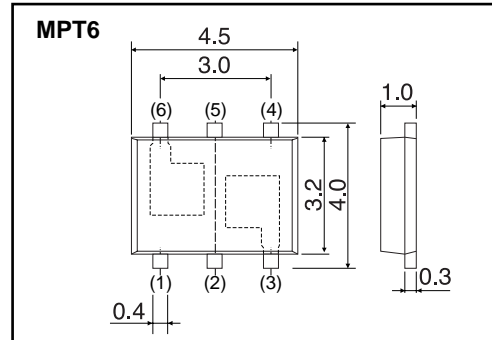
●Structure

PNP Silicon epitaxial planar transistor

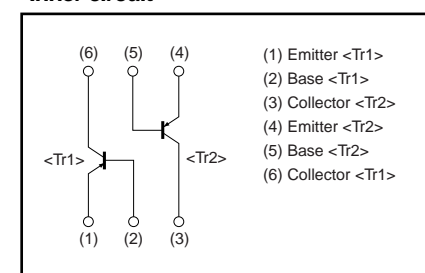
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit(pieces)	1000
MP6T3		○

●Dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	−60	V
Collector-emitter voltage		V_{CEO}	−60	V
Emitter-base voltage		V_{EBO}	−6	V
Collector current	Continuous	I_C	−3	A
	Pulsed	$I_{CP} *1$	−6	A
Power dissipation		$P_D *2$	2.0	W / TOTAL
			1.4	W / ELEMENT
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	−55 to +150	°C

*1 $P_w=10ms$ 1 Pulse

*2 Mounted on a ceramic board

Transistors

●Electrical characteristics (Ta=25°C)

<Tr1, Tr2>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-Emitter breakdown voltage	BV_{CEO}	-60	-	-	V	$I_C = -1\text{mA}$
Collector-base breakdown voltage	BV_{CBO}	-60	-	-	V	$I_C = -100\mu\text{A}$
Emitter-base breakdown voltage	BV_{EBO}	-6	-	-	V	$I_E = -100\mu\text{A}$
Collector cut off current	I_{CBO}	-	-	-1.0	μA	$V_{CB} = -40\text{V}$
Emitter cut off current	I_{EBO}	-	-	-1.0	μA	$V_{EB} = -4\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}^{*1}$	-	-200	-500	mV	$I_C/I_B = -2A/-200\text{mA}$
DC current gain	h_{FE}	120	-	270	-	$V_{CE} = -2\text{V}, I_C = -100\text{mA}$
Transition frequency	f_T^{*1}	-	180	-	MHz	$V_{CE} = -10\text{V}, I_E = 100\text{mA}, f = 10\text{MHz}$
Collector output capacitance	C_{ob}	-	50	-	pF	$V_{CB} = -10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$
Turn-on time	t_{on}^{*2}	-	20	-	ns	$I_C = -3\text{V}$
Storage time	t_{stg}^{*2}	-	150	-	ns	$I_{B1} = -300\text{mA}$ $I_{B2} = 300\text{mA}$
Fall time	t_f^{*2}	-	20	-	ns	$V_{CC} \approx -25\text{V}$

*1 Pulsed

*2 See switching time test circuit

●Electrical characteristics curves

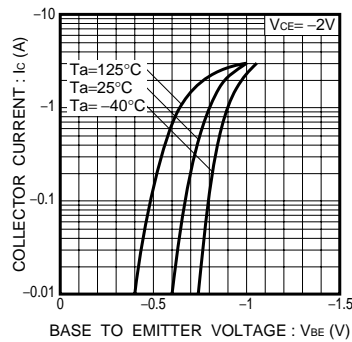


Fig.1 Grounded Emitter Propagation Characteristics

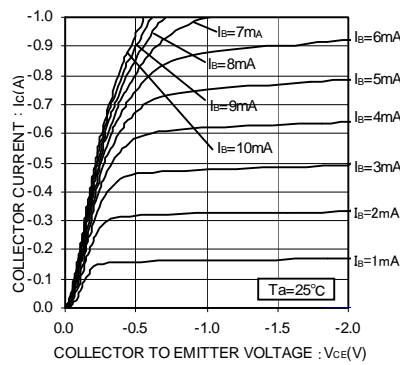


Fig.2 Grounded Emitter Output Characteristics

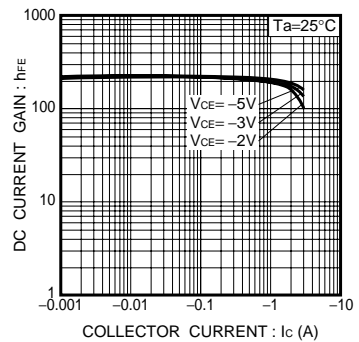


Fig.3 DC Current Gain vs. Collector Current (I)

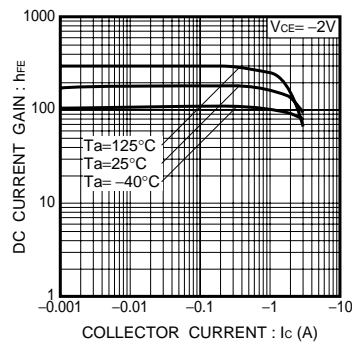


Fig.4 DC Current Gain vs. Collector Current (II)

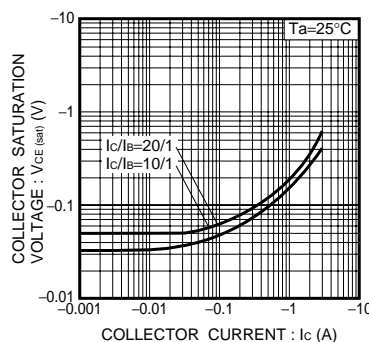


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

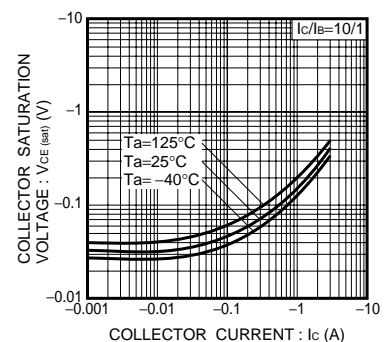


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

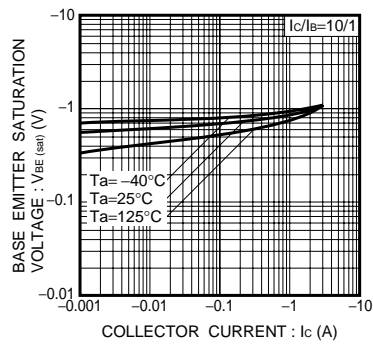


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

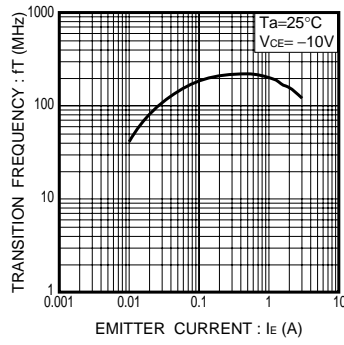


Fig.8 Transition Frequency

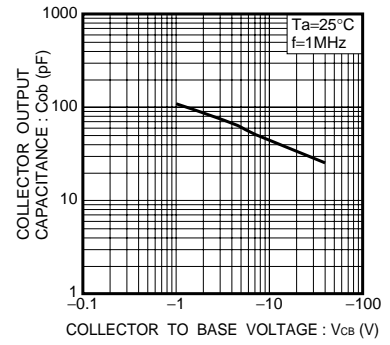


Fig.9 Collector Output Capacitance

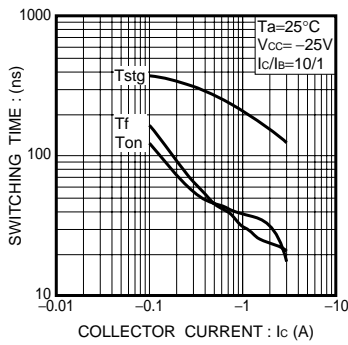


Fig.10 Switching Time

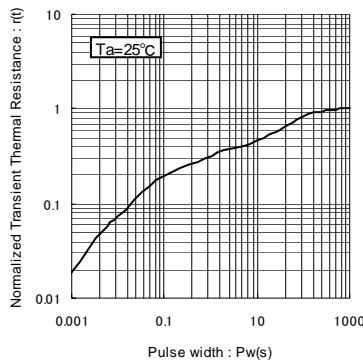


Fig.11 Normalized Thermal Resistance (Element)

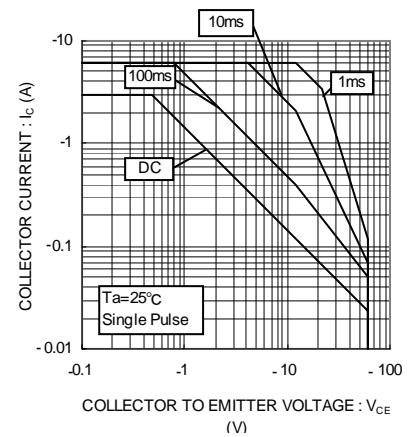
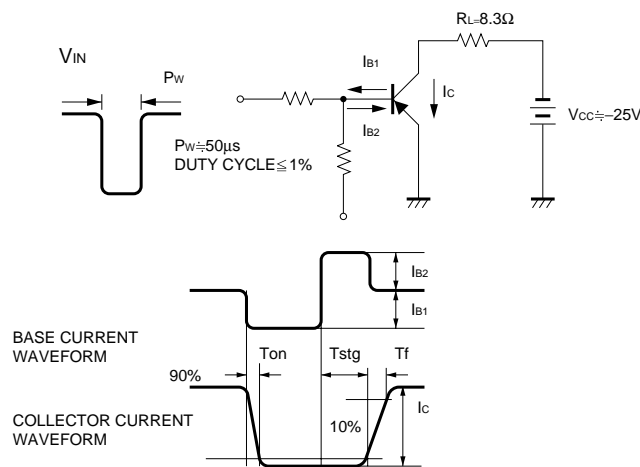


Fig.12 Safe Operating Area (Tr1&Tr2)

●Switching characteristics measurement circuits



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