

Medium Power Transistors (-30V / -5A)

2SAR542P

● Structure

PNP Silicon epitaxial planar transistor

● Features

- 1) Low saturation voltage, typically
 $V_{CE(sat)} = -0.4V$ (Max.) ($I_C / I_B = -2A / -100mA$)
- 2) High speed switching

● Applications

Driver

● Packaging specifications

Type	Package	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
2SAR542P		○

● Absolute maximum ratings (Ta = 25°C)

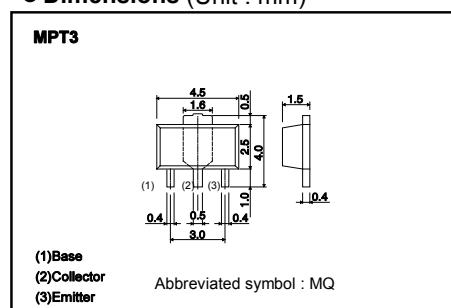
Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	-30	V
Collector-emitter voltage	V_{CEO}	-30	V
Emitter-base voltage	V_{EBO}	-6	V
Collector current	DC	I_C	-5
	Pulsed	I_{CP}^{*1}	-10
Power dissipation		P_D^{*2}	0.5
		P_D^{*3}	2
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to 150	°C

*1 Pw=10ms, Single Pulse

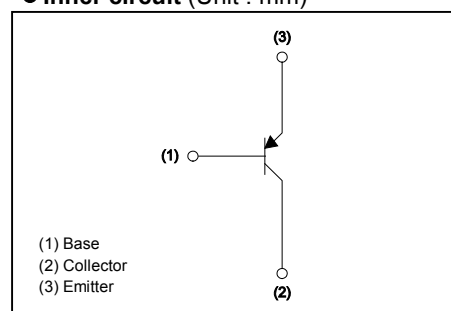
*2 Each terminal mounted on a recommended land.

*3 Mounted on a ceramic board. (40x40x0.7mm³)

● Dimensions (Unit : mm)



● Inner circuit (Unit : mm)



●Electrical characteristic (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	-30	-	-	V	$I_C = -1mA$
Collector-base breakdown voltage	BV_{CBO}	-30	-	-	V	$I_C = -100\mu A$
Emitter-base breakdown voltage	BV_{EBO}	-6	-	-	V	$I_E = -100\mu A$
Collector cut-off current	I_{CBO}	-	-	-1	μA	$V_{CB} = -30V$
Emitter cut-off current	I_{EBO}	-	-	-1	μA	$V_{EB} = -4V$
Collector-emitter saturation voltage	$V_{CE(sat)}^{*1}$	-	-200	-400	mV	$I_C = -2A, I_B = -100mA$
DC current gain	h_{FE}	200	-	500	-	$V_{CE} = -2V, I_C = -500mA$
Transition frequency	f_T^{*1}	-	240	-	MHz	$V_{CE} = -10V$ $I_E = 100mA, f = 100MHz$
Collector output capacitance	C_{ob}	-	40	-	pF	$V_{CB} = -10V, I_E = 0A$ $f = 1MHz$
Turn-on time	t_{on}^{*2}	-	45	-	ns	$I_C = -2.5A, I_{B1} = -250mA,$ $I_{B2} = 250mA, V_{CC} \simeq -10V$
Storage time	t_{stg}^{*2}	-	200	-	ns	
Fall time	t_f^{*2}	-	25	-	ns	

*1 Pulsed

*2 See switching time test circuit

Electrical characteristic curves

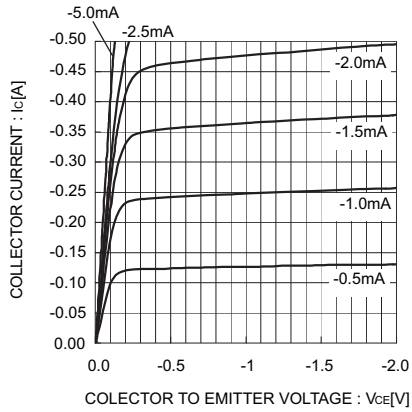


Fig.1 Typical Output Characteristics

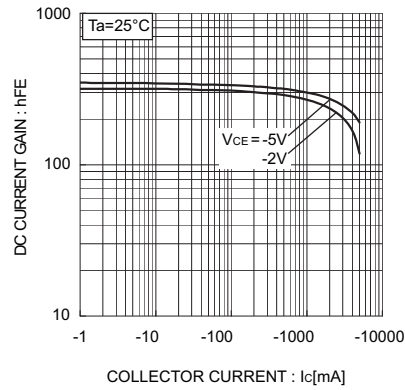
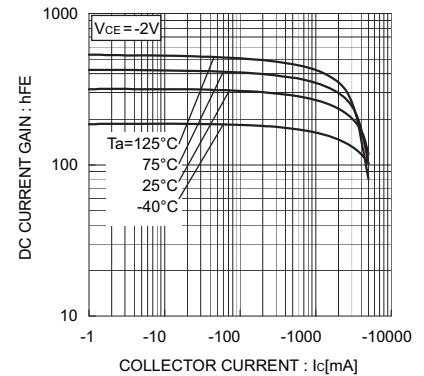
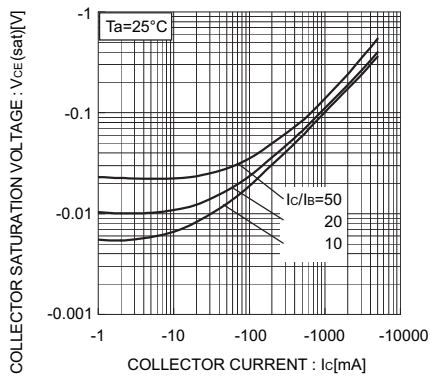
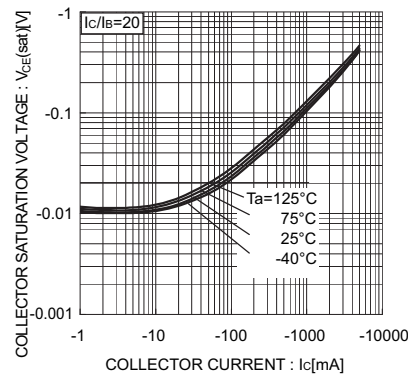
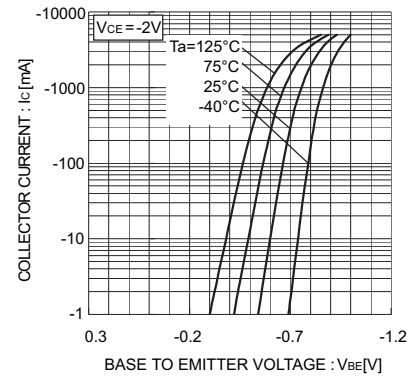
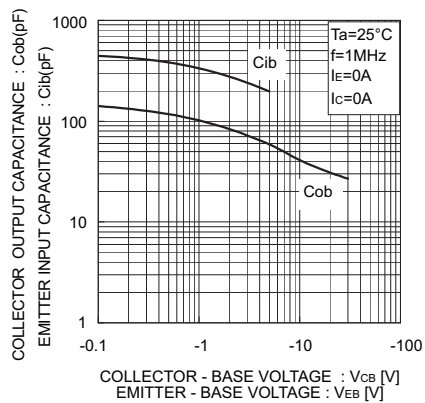
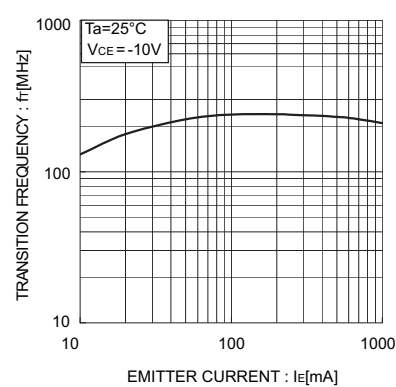
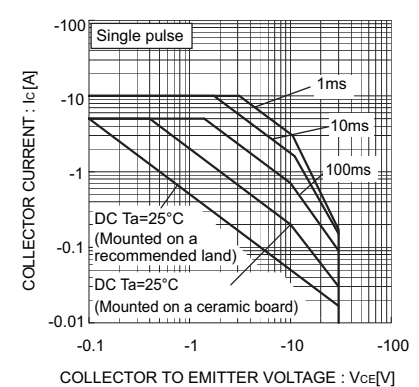
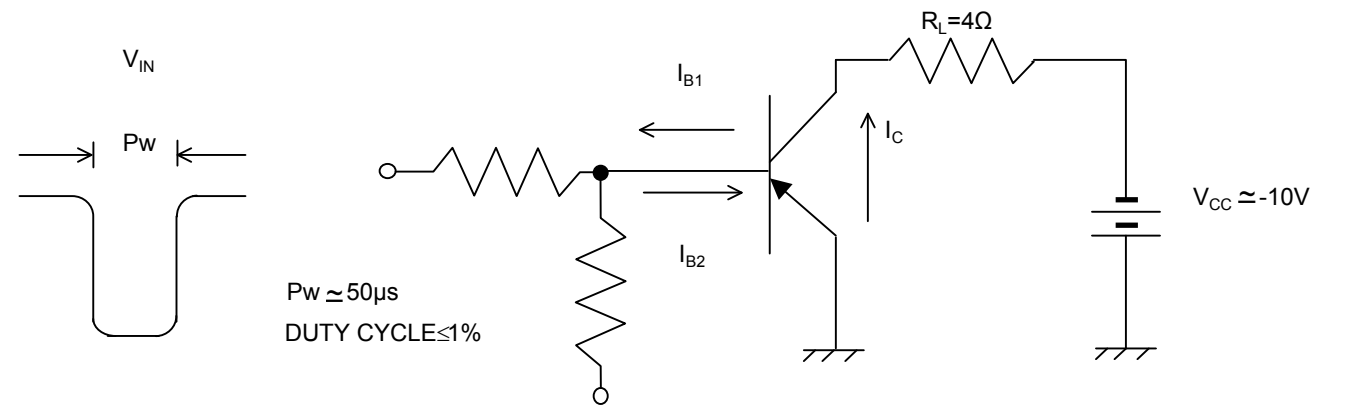
Fig.2 DC Current Gain vs.
Collector Current (I)Fig.3. DC Current Gain vs.
Collector Current (II)Fig.4 Collector-Emitter Saturation Voltage
vs. Collector Current (I)Fig.5 Collector-Emitter Saturation Voltage
vs. Collector Current (II)Fig.6 Ground Emitter Propagation
CharacteristicsFig.7 Emitter Input Capacitance vs.
Emitter-Base Voltage
Collector Output Capacitance vs.
Collector-Base VoltageFig.8 Gain Bandwidth Product vs.
Emitter Current

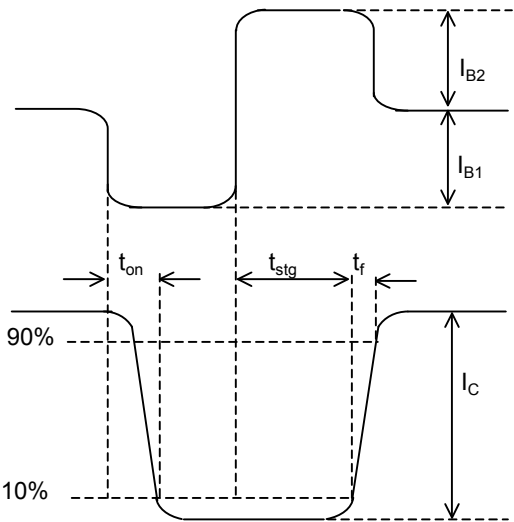
Fig.9 Safe Operating Area

●Switching time test circuit



BASE CURENT WAVEFORM

COLLECTOR CURRENT WAVEFORM



Notes

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