Medium Power Transistors (–30V / –2A)

2SAR512P

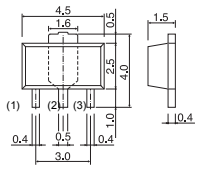
● Structure
PNP Silicon epitaxial planar transistor

● Features
1) Low saturation voltage, typically
$V_{CE\ (sat)}$ = -0.4V (Max.) (I_C / I_B= -700mA / -35mA)
2) High speed switching

● Applications
Driver

● Dimensions (Unit : mm)

MPT3



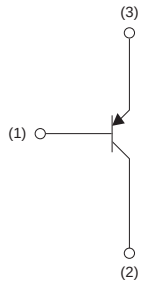
(1)Base
(2)Collector
(3)Emitter

Abbreviated symbol : MB

● Packaging specifications

Type	Package	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
2SAR512P		O

● Inner circuit (Unit : mm)



(1) Base
(2) Collector
(3) Emitter

● 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	-2	A
	Pulsed	I_{CP} *1	-4	A
Power dissipation		P_D *2	0.5	W
		P_D *3	2	W
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)

●**Electrical characteristic** (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CBO}	-30	-	-	V	I_C= -1mA
Collector-base breakdown voltage	BV_{CEO}	-30	-	-	V	I_C= -100μA
Emitter-base breakdown voltage	BV_{EBO}	-6	-	-	V	I_E= -100μA
Collector cut-off current	I_{CBO}	-	-	-1	μA	V_{CB}= -30V
Emitter cut-off current	I_{EBO}	-	-	-1	μA	V_{EB}= -4V
Collector-emitter staturation voltage	$V_{CE(sat)}$*1	-	-200	-400	mV	I_C= -700mA, I_B= -35mA
DC current gain	h_{FE}	200	-	500	-	V_{CE}= -2V, I_C= -100mA
Transition frequency	f_T *1	-	430	-	MHz	V_{CE}= -10V I_E=100mA, f=100MHz
Collector output capacitance	C_{ob}	-	15	-	pF	V_{CB}= -10V, I_E=0A f=1MHz
Turn-on time	t_{on} *2	-	30	-	ns	I_C= -1A,I_{B1}= -100mA, I_{B2}=100mA,V_{CC}≒-10V
Storage time	t_{stg} *2	-	170	-	ns	
Fall time	t_f *2	-	15	-	ns	

*1 Pulsed

*2 See switching time test circuit

●Electrical characteristic curves

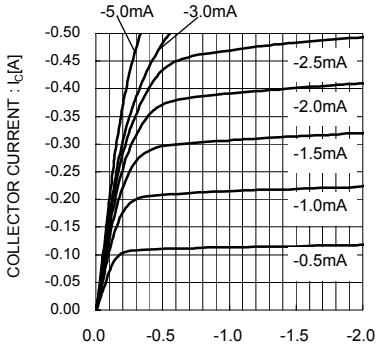


Fig.1 Typical Output Characteristics

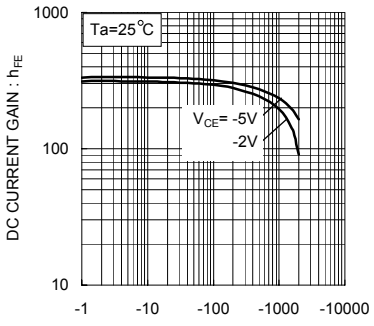


Fig2. DC Current Gain vs. Collector Current (I)

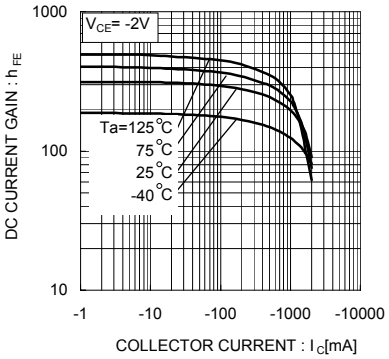


Fig3. DC Current Gain vs.Collector Current (II)

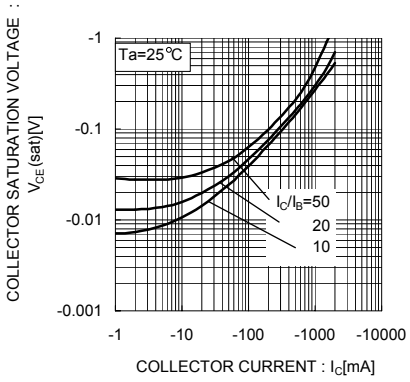


Fig4. Collector-Emitter Saturation Voltage vs. Collector Current (I)

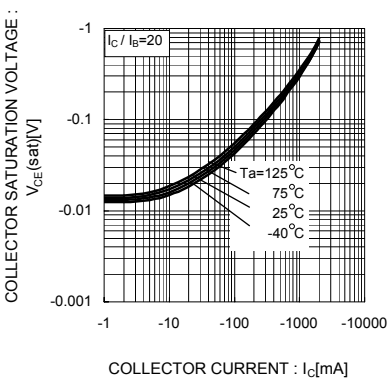


Fig5. Collector-Emitter Saturation Voltage vs. Collector Current (II)

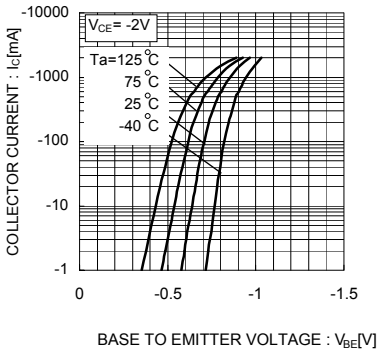


Fig.6 Ground Emitter Propagation Characteristics

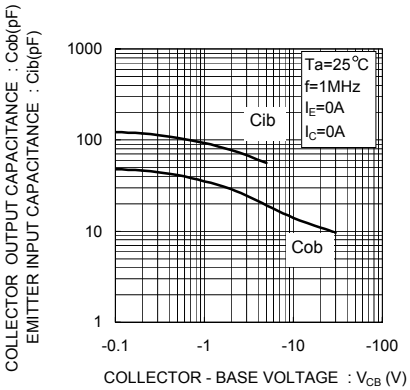


Fig.7 Emitter Input Capacitance vs. Emitter-Base Voltage
Collector Output Capacitance vs. Collector-Base Voltage

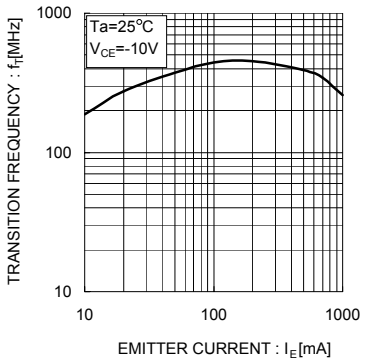


Fig8. Gain Bandwidth Product vs. Emitter Current

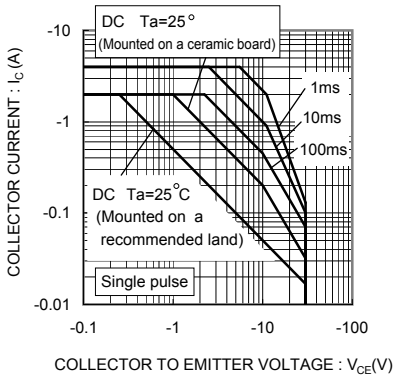
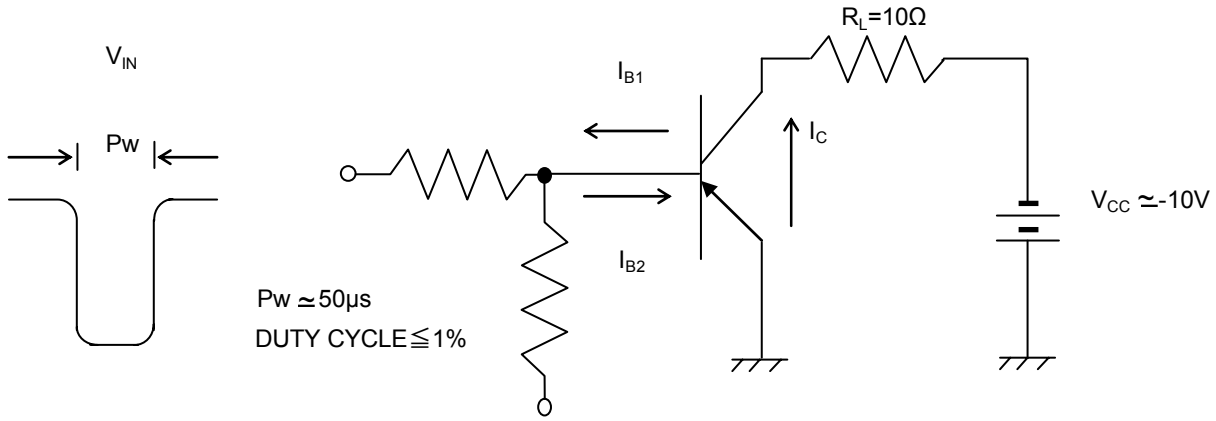
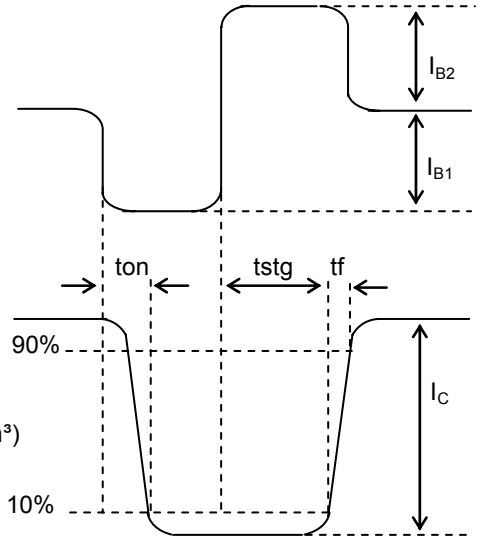


Fig.9 Safe Operating Area

●**Switching time test circuit**





*1 Pw=10ms, Single Pulse

COLLECTOR CURRENT WAVEFORM

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

Notes

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