UTC 2SA1020 PNP EPITAXIAL SILICON TRANSISTOR

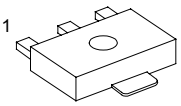
SILICON PNP EPITAXIAL TRANSISTOR

DESCRIPTION

The UTC 2SA1020 is designed for power amplifier and power switching applications.

FEATURES

*Low collector saturation voltage:
VCE(sat)=-0.5V(max.) (IC=-1A)
*High speed switching time: tstg=1.0μs(Typ.)
*Complement to UTC 2SC2655



SOT-89

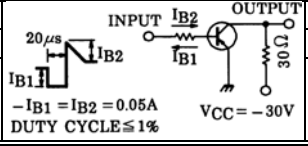
1:EMITTER 2:COLLECTOR 3:BASE

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	Ic	-2	A
Collector Power Dissipation	P_C	0.5	W
Collector Power Dissipation	P_C*	1	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

* : Mounted on cermic substrate(250mm^2 × 0.8t)

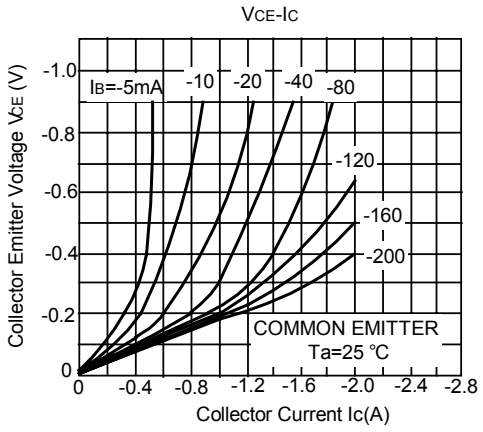
ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

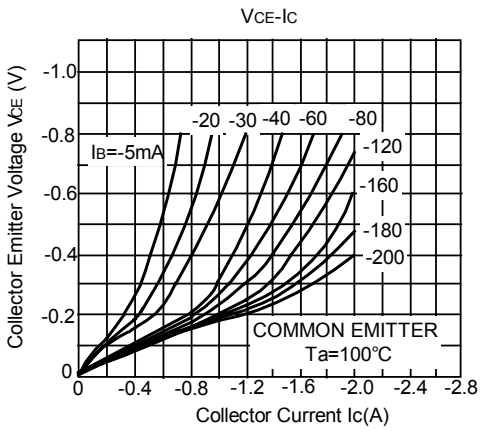
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector cut-off current		I_{CBO}	V_{CB}=-50V, I_E=0			-1.0	μA
Emitter cut-off current		I_{EBO}	V_{EB}=-5V, I_C=0			-1.0	μA
Collector to emitter breakdown voltage		$V_{(BR)CEO}$	Ic=-10mA, I_B=0	-50			V
DC Current Gain		h_{FE1} h_{FE2}	V_{CE}=-2V, I_C=-0.5A V_{CE}=-2V, I_C=-1.5A	70 40		240	
Collector to emitter saturation voltage		$V_{CE(sat)}$	Ic=-1A, I_B=-0.05A			-0.5	V
Base to emitter saturation voltage		$V_{BE(sat)}$	Ic=-1A, I_B=-0.05A			-1.2	V
Transition frequency		f_T	V_{CE}=-2V, Ic=-0.5A		100		MHz
Collector output capacitance		Cob	V_{CB}=-10V, I_E=0, f=1MHz		40		pF
Switching time	Turn-on time	ton			0.1		μs
	Storage time	tstg			1.0		μs
	Fall time	tf			0.1		μs

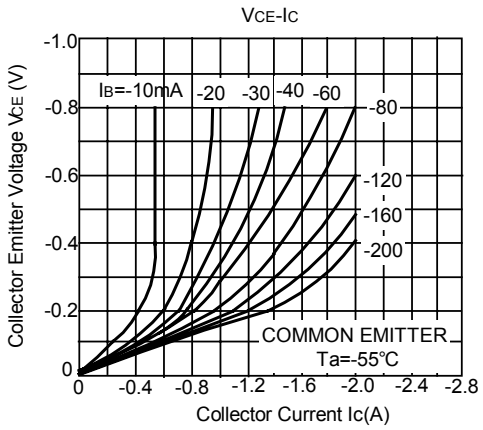
CLASSIFICATION OF h_{FE1}

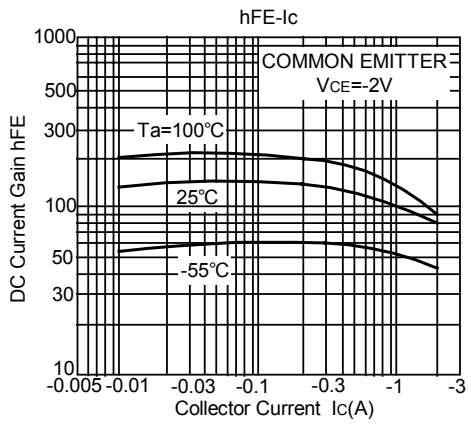
RANK	O	Y
RANGE	70 - 140	120 - 240

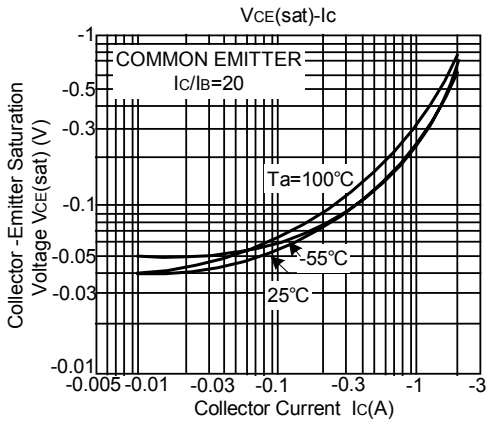
TYPICAL PERFORMANCE CHARACTERISTICS

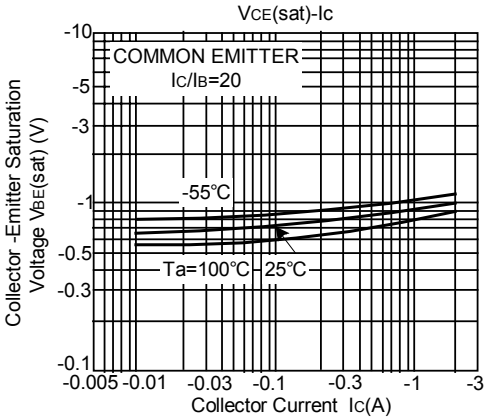


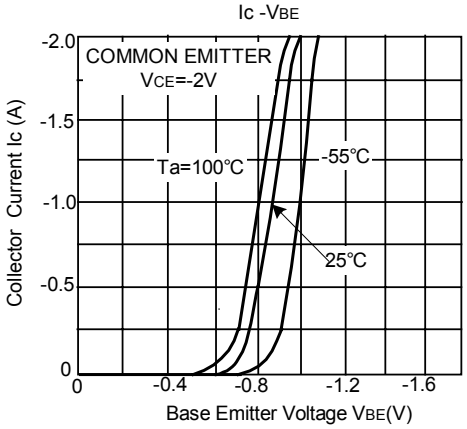


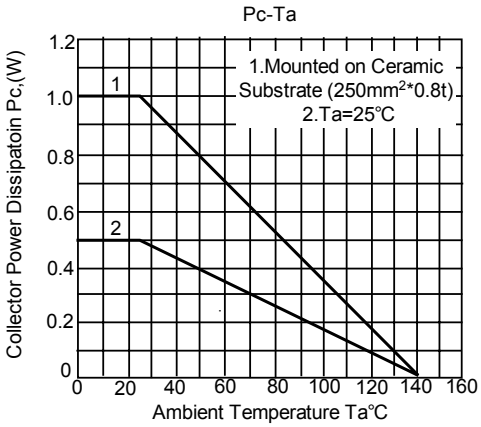


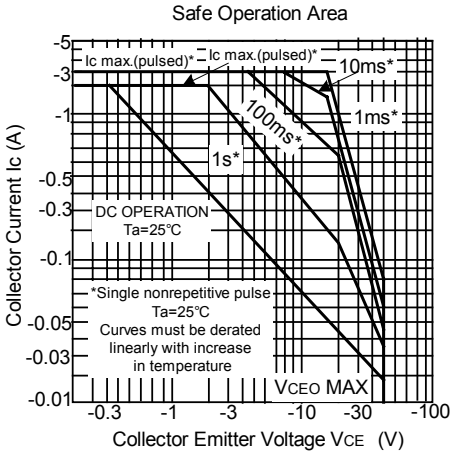



VCE(sat)-Ic
COMMON EMITTER
IC/IB=20
Ta=100℃
-55℃
25℃
Collector -Emitter Saturation Voltage VCE(sat) (V)
Collector Current IC(A)
-1
-0.5
-0.3
-0.1
-0.05
-0.03
-0.01
-0.005 -0.01 -0.03 -0.1 -0.3 -1 -3


VCE(sat)-Ic
COMMON EMITTER
IC/IB=20
-55℃
Ta=100℃
25℃
Collector -Emitter Saturation Voltage VBE(sat) (V)
Collector Current IC(A)
-10
-5
-3
-1
-0.5
-0.3
-0.1
-0.005 -0.01 -0.03 -0.1 -0.3 -1 -3


Ic -VBE
COMMON EMITTER
VCE=-2V
Ta=100℃
-55℃
25℃
Collector Current Ic (A)
Base Emitter Voltage VBE(V)
-2.0
-1.5
-1.0
-0.5
0
0 -0.4 -0.8 -1.2 -1.6


Pc-Ta
1.Mounted on Ceramic Substrate (250mm²*0.8t)
2.Ta=25℃
1
2
Collector Power Dissipatoin Pc,(W)
Ambient Temperature Ta℃
1.2
1.0
0.8
0.6
0.4
0.2
0
0 20 40 60 80 100 120 140 160


Safe Operation Area
Ic max.(pulsed)*
Ic max.(pulsed)*
10ms*
1ms*
100ms*
1s*
DC OPERATION
Ta=25℃
*Single nonrepetitive pulse
Ta=25℃
Curves must be derated linearly with increase in temperature
VCEO MAX
Collector Current Ic (A)
Collector Emitter Voltage VCE (V)
-5
-3
-1
-0.5
-0.3
-0.1
-0.05
-0.03
-0.01
-0.3 -1 -3 -10 -30 -100