UTC 2SD1802 NPN EPITAXIAL PLANAR SILICON TRANSISTOR

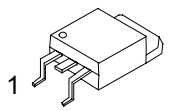
HIGH CURRENT SWITCHING APPLICATION

DESCRIPTION

The UTC 2SD1802 applies to voltage regulators, relay drivers, lamp drivers, and electrical equipment.

FEATURES

*Adoption of FBET, MBIT processes
*Large current capacity and wide ASO
*Low collector-to-emitter saturation voltage
*Fast switching speed



TO-252

1: BASE 2: COLLECTOR 3: EMITTER

ABSOLUTE MAXIMUM RATINGS (Ta=25°C ,unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Power Dissipation Tc=25°C	Pc	1 15	W W
Collector Current(DC)	Ic	3	A
Collector Current(PULSE)	Icp	6	A
Junction Temperature	T_j	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

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

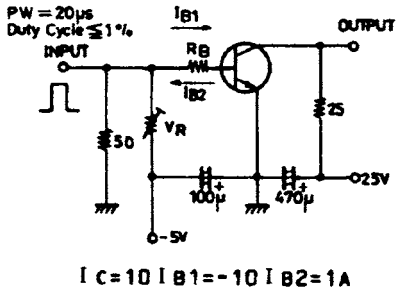
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cutoff Current	I_{CBO}	V_{CB}=40V,I_E=0			1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V,I_C=0			1	μA
DC Current Gain (note)	h_{FE1} h_{FE2}	V_{CE}=2V, Ic=100mA V_{CE}=2V, Ic=3A	100 35		560	
Gain-Bandwidth Product	fT	V_{CE}=10V,I_C=50mA		150		MHz
Output Capacitance	Cob	V_{CB}=10V,f=1MHz		25		pF
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=2A,I_B=100mA		0.19	0.5	V
B-E Saturation Voltage	$V_{BE(sat)}$	I_C=2A,I_B=100mA		0.94	1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA,I_E=0	60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA,R_{BE}=∞	50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA,I_C=0	6			V
Turn-on Time	ton	See test circuit		70		ns

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Storage Time	tstg	See test circuit		650		ns
Fall Time	tf	See test circuit		35		ns

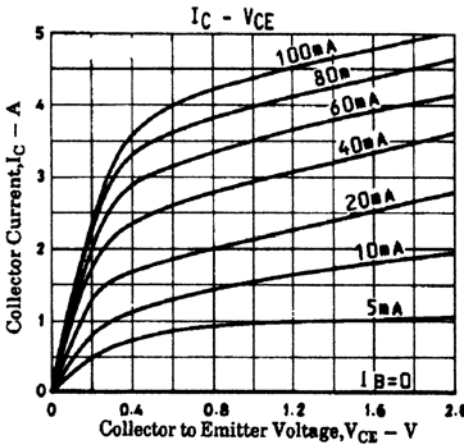
CLASSIFICATION OF h_{FE1}

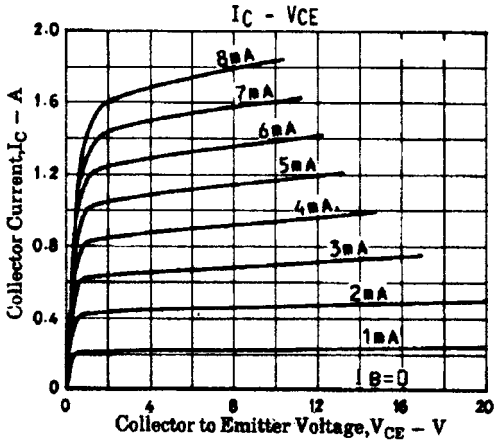
RANK	R	S	T	U
RANGE	100-200	140-280	200-400	280-560

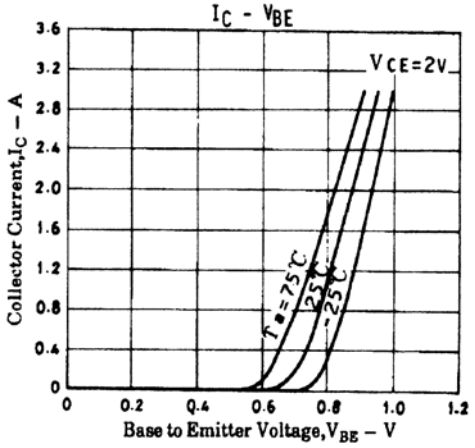
TEST CIRCUIT (Unit : resistance : Ω, capacitance : F)

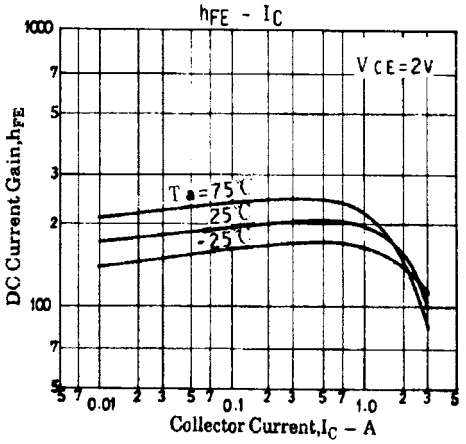


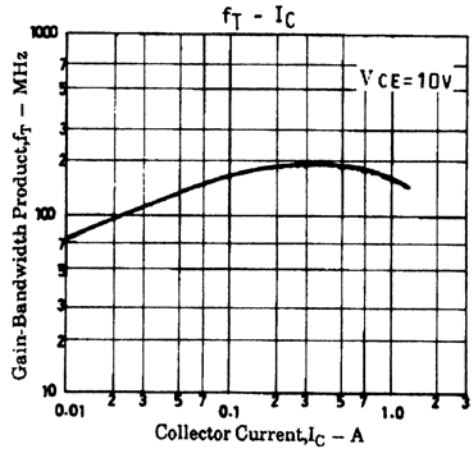
$I_C = 10 I_{B1} = -10 I_{B2} = 1A$

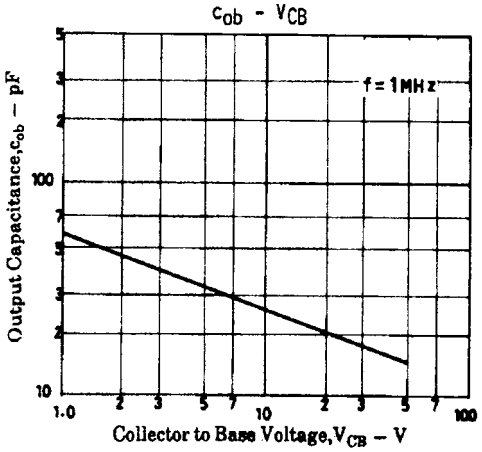


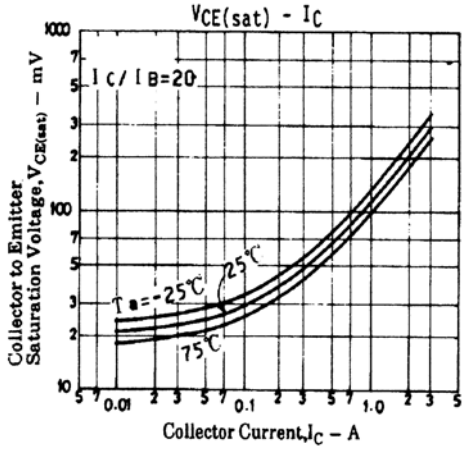


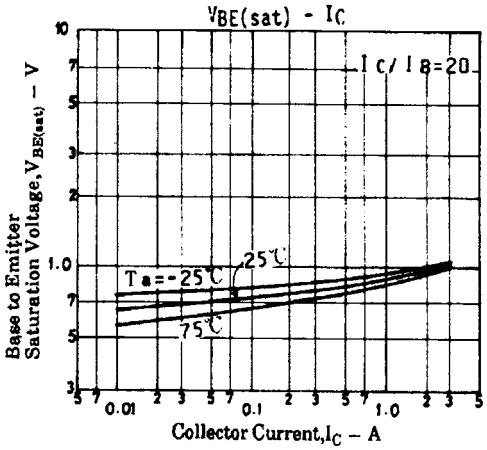

I_C - V_{BE}
V_{CE}=2V
Ta=75℃
25℃
-25℃
Collector Current, I_C – A
Base to Emitter Voltage, V_{BE} – V

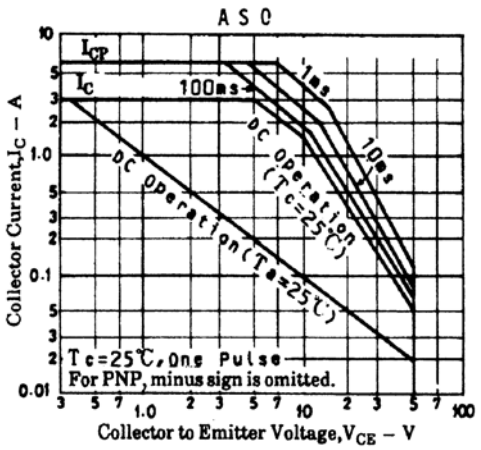

h_{FE} - I_C
V_{CE}=2V
Ta=75℃
25℃
-25℃
DC Current Gain, h_{FE}
Collector Current, I_C – A

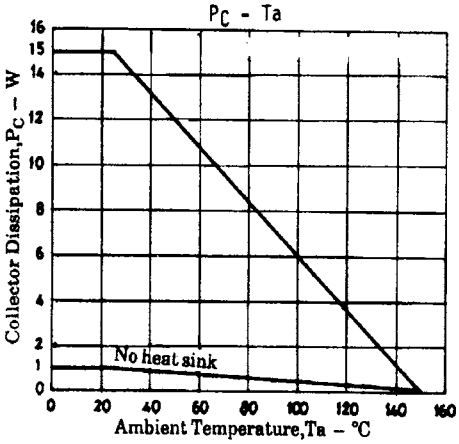

f_T - I_C
V_{CE}=10V
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – A


C_{ob} - V_{CB}
f=1MHz
Output Capacitance, C_{ob} – pF
Collector to Base Voltage, V_{CB} – V


$V_{CE(sat)}$ - I_C
I_C/I_B=20
Ta=-25℃
25℃
75℃
Collector to Emitter Saturation Voltage, $V_{CE(sat)}$ – mV
Collector Current, I_C – A


$V_{BE(sat)}$ - I_C
I_C/I_B=20
Ta=-25℃
25℃
75℃
Base to Emitter Saturation Voltage, $V_{BE(sat)}$ – V
Collector Current, I_C – A


A S O
I_{CP}
I_C
1ms
100ms
10ms
DC Operation
DC Operation (Tc=25℃)
Tc=25℃, 0ns Pulse
For PNP, minus sign is omitted.
Collector Current, I_C – A
Collector to Emitter Voltage, V_{CE} – V


P_C - Ta
No heat sink
Collector Dissipation, P_C – W
Ambient Temperature, Ta – °C