UTC 2SD1802 NPN EPITAXIAL PLANAR SILICON TRANSISTOR

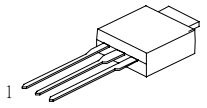
HIGH CURRENT SWITCHING APPLICATION

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



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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

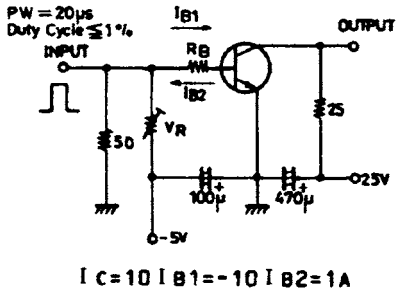
ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

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
Storage Time	tstg	See test circuit		650		ns
Fall Time	tf	See test circuit		35		ns

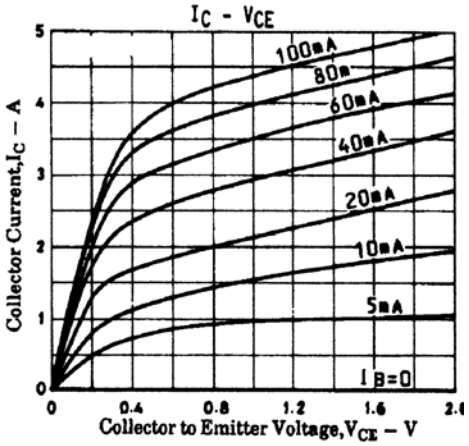
CLASSIFICATION OF h_{FE1}

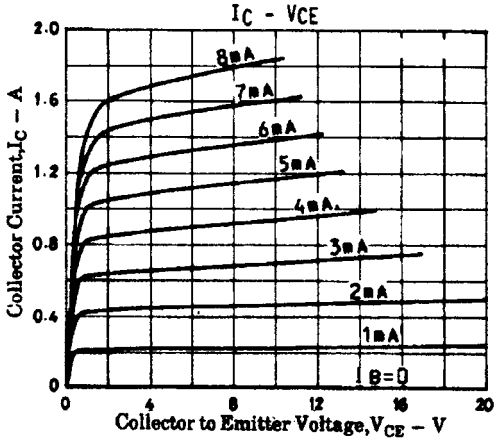
RANK	R	S	T	U
RANGE	100-200	140-280	200-400	280-560

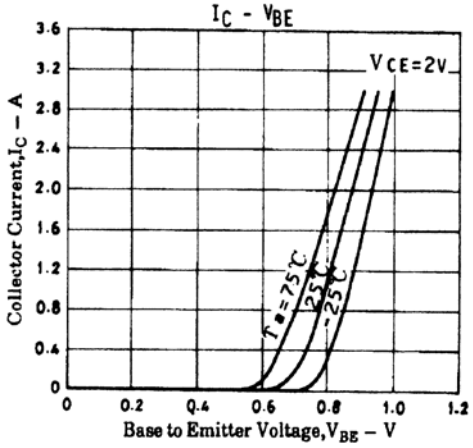
TEST CIRCUIT (Unit : resistance : Ω, capacitance : F)

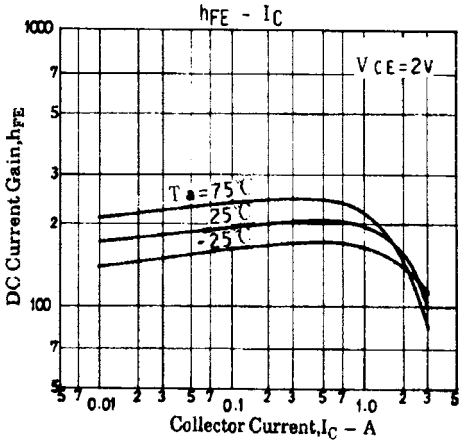


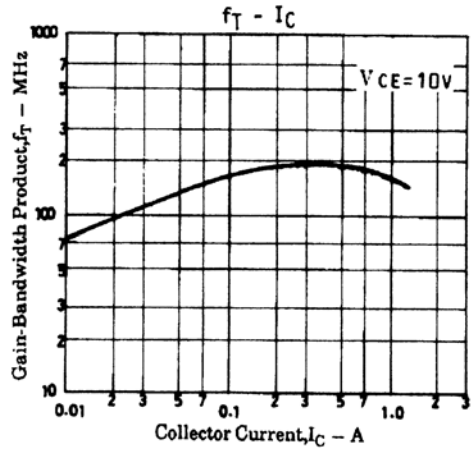
$I_C = 10 I_{B1} = -10 I_{B2} = 1A$

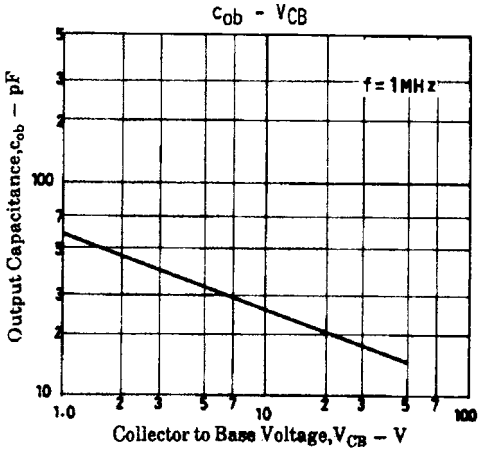


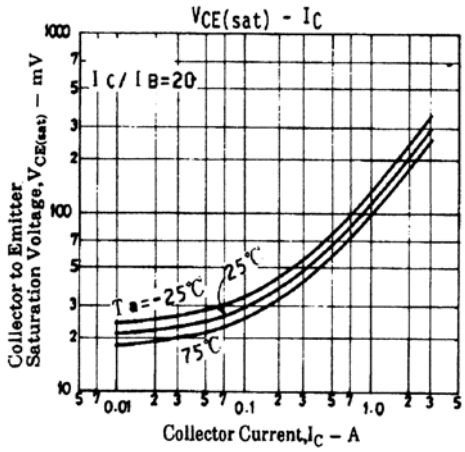


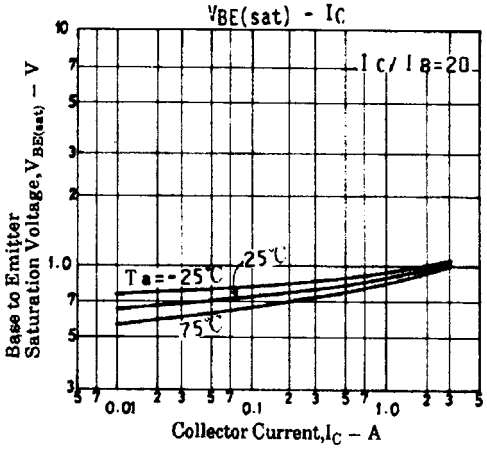

I_C - V_{BE}
V_{CE}=2V
Ta=75℃
25℃
-25℃
Collector Current,I_C – A
Base to Emitter Voltage,V_{BE} – V

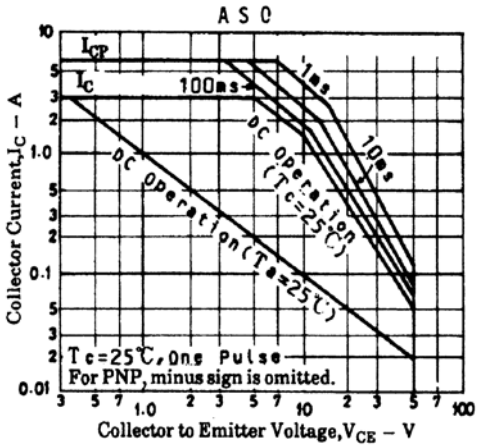

h_{FE} - I_C
V_{CE}=2V
Ta=75℃
25℃
-25℃
DC Current Gain,h_{FE}
Collector Current,I_C – A

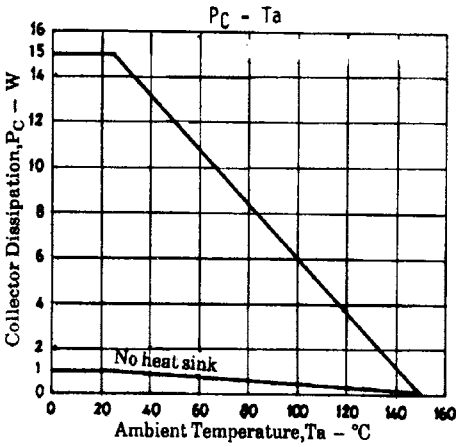

f_T - I_C
V_{CE}=10V
Gain-Bandwidth Product,f_T – MHz
Collector Current,I_C – A


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





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