UTC 2SD1816 NPN EPITAXIAL PLANAR TRANSISTOR

HIGH CURRENT SWITCHIG APPLICATIONS

FEATURES

*Low collector-to-emitter saturation voltage

*Good linearity of hFE

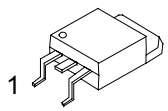
*Small and slim package facilitating compactness of sets .

*High f_T

*Fast switching speed

APPLICATION

*Suitable for relay drivers, high-speed inverters, converters, and other general high-current switching applications.



TO-252

1: BASE 2: COLLECTOR 3: EMITTER

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current DC	Ic	4	A
PULSE(Note 1)		8	A
Collector Power Dissipation	Pc	1	W
		(T_C=25°C) 20 (Note 2)	W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Note1: Duty=1/2,Pw=20ms

Note2: When mounted on a 40*40*0.7 mm ceramic board

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

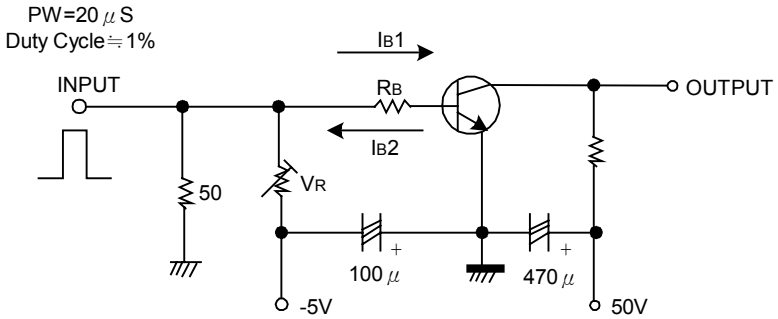
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Base Breakdown Voltage	BV_{CBO}	Ic=10 μA,I_E=0	120			V
Collector Emitter Breakdown Voltage	BV_{CEO}	Ic=1mA,R_B=∞	100			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E=10 μA,I_C=0	6			V
Collector Cut-Off Current	I_{CBO}	V_{CB}= 100 V,I_E=0			1	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}= 4 V,I_C=0			1	μA
DC Current Transfer Ratio	h_{FE1}	V_{CE}= 5 V,Ic= 0.5 A	70		400	
	h_{FE2}	V_{CE}=5 V,Ic= 3 A	40			
Collector-Emitter Saturation Voltage	V_{CE}(sat)	Ic= 2 A, I_B=0.2 A		150	400	mV
Base-Emitter Saturation Voltage	V_{BE}(sat)	Ic= 2 A, I_B= 0.2A		0.9	1.2	V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Transition Frequency	f_T	V_{CE}= 10V, I_C= 0.5A		180		MHz
Output Capacitance	Cob	V_{CB}=10 V, I_E= 0 A,f=1MHz		40		pF
Turn-on Time	ton	See test circuit		100		ns
Storage Time	tstg	See test circuit		900		ns
Fall Time	tf	See test circuit		50		ns

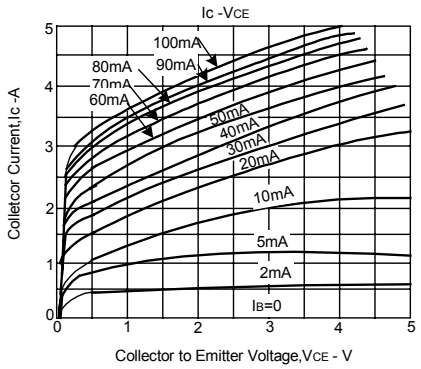
CLASSIFICATION of hFE1

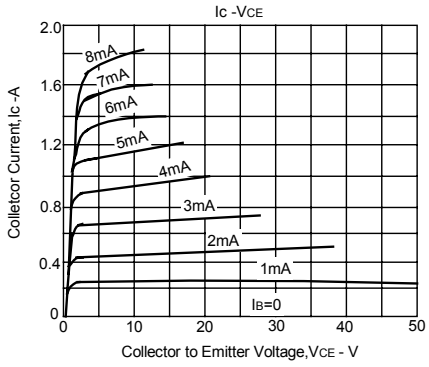
RANK	R	S	T	Q
RANGE	100-200	140-280	200-400	70-140

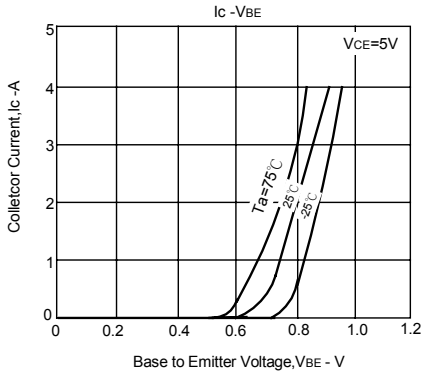
TEST CIRCUIT

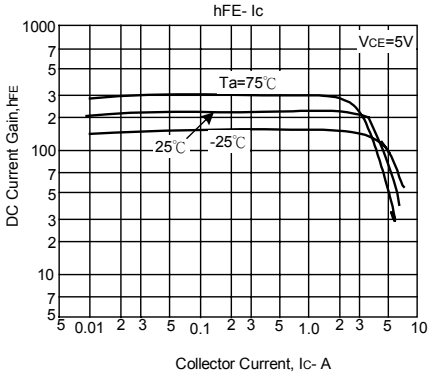


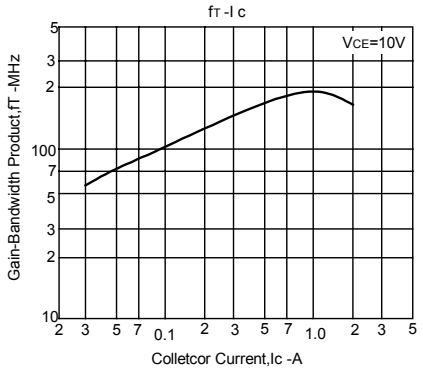
Ic=10 I_{B1}=-10 I_{B2}=2A
Unit(resistance:Ω,capacitance:F)

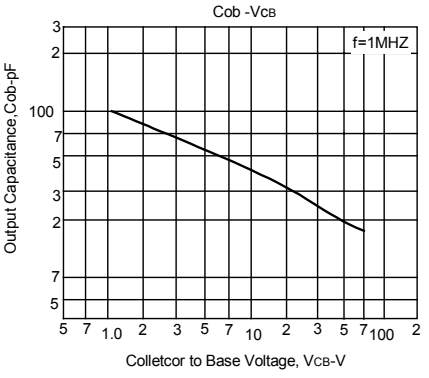

Ic -VCE
Colletcor Current,Ic -A
Collector to Emitter Voltage,VCE - V
100mA
90mA
80mA
70mA
60mA
50mA
40mA
30mA
20mA
10mA
5mA
2mA
IB=0

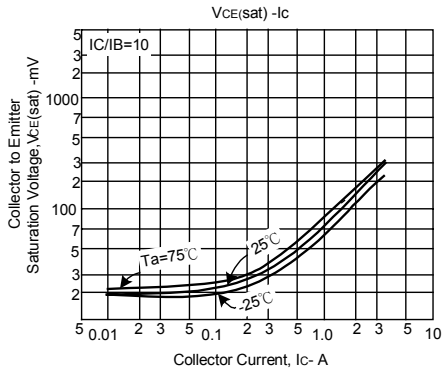

Ic -VCE
Colletcor Current,Ic -A
Collector to Emitter Voltage,VCE - V
8mA
7mA
6mA
5mA
4mA
3mA
2mA
1mA
IB=0

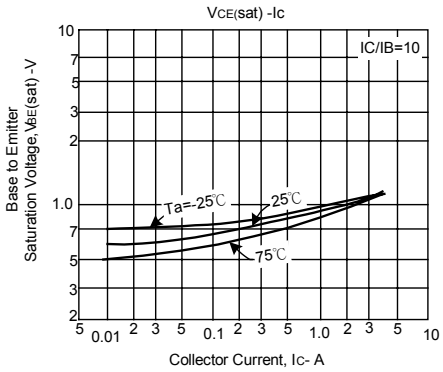

Ic -VBE
Colletcor Current,Ic -A
Base to Emitter Voltage,VBE - V
VCE=5V
Ta=75℃
25℃
-25℃

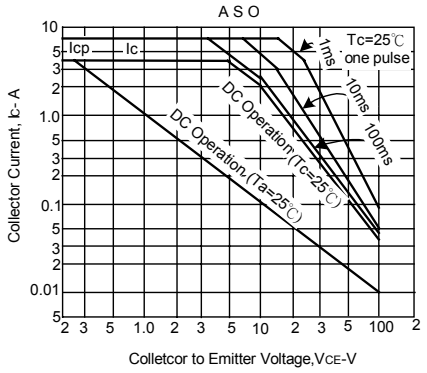

hFE- Ic
DC Current Gain,hFE
Collector Current, IC- A
VCE=5V
Ta=75℃
25℃
-25℃

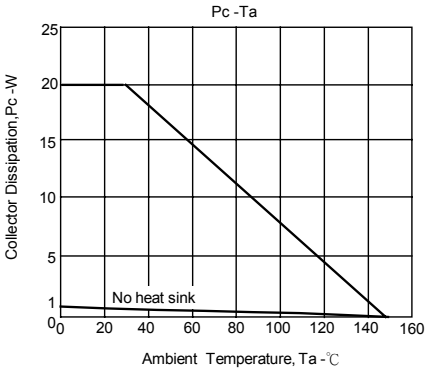

fT -I c
Gain-Bandwidth Product,fT -MHz
Colletcor Current,Ic -A
VCE=10V


Cob -VCB
Output Capacitance,Cob-pF
Colletcor to Base Voltage, VCB-V
f=1MHZ


VCE(sat) -Ic
IC/IB=10
Collector to Emitter Saturation Voltage,VCE(sat) -mV
Ta=75℃
25℃
-25℃
Collector Current, IC- A


VCE(sat) -Ic
IC/IB=10
Base to Emitter Saturation Voltage, VBE(sat) -V
Ta=-25℃
25℃
75℃
Collector Current, IC- A


A S O
Icp
Ic
Tc=25℃
one pulse
1ms
10ms
100ms
DC Operation
DC Operation (Tc=25℃)
Collector Current, IC- A
Colletcor to Emitter Voltage,VCE-V


Pc -Ta
Collector Dissipation,Pc -W
No heat sink
Ambient Temperature, Ta -℃