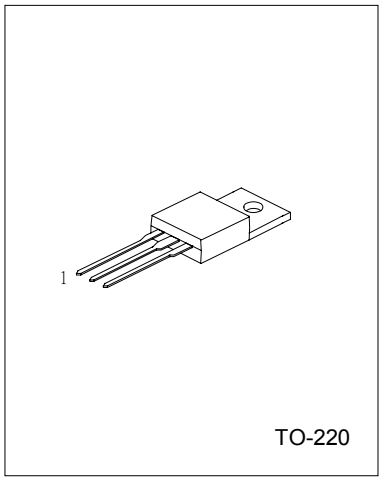
UTC 2SD1060 NPN EPITAXIAL PLANAR TRANSISTOR

NPN EPITAXIAL PLANAR SILICON TRANSISTOR



1: BASE 2: COLLECTOR 3: EMITTER

FEATURE

*Low collector-to-emitter saturation voltage:
$V_{CE(sat)}$=0.4V max/I_C=3A, I_B=0.3A

APPLICATIONS

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

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	6	V
Collector Current	IC	5	A
Collector Current (Pulse)	I_{CP}	9	A
Collector Dissipation (Tc=25°C)	P_C	30	W
Junction Temperature	Tj	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

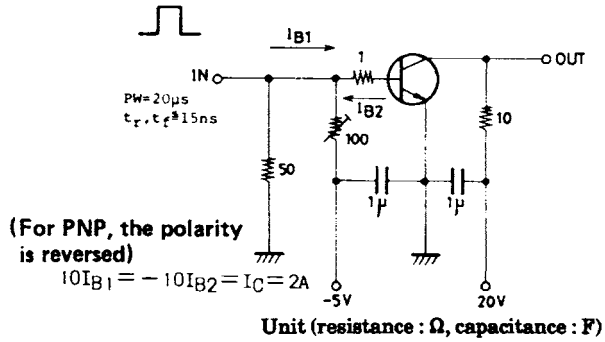
ELECTRICAL CHARACTERISTICS (Ta=25°C)

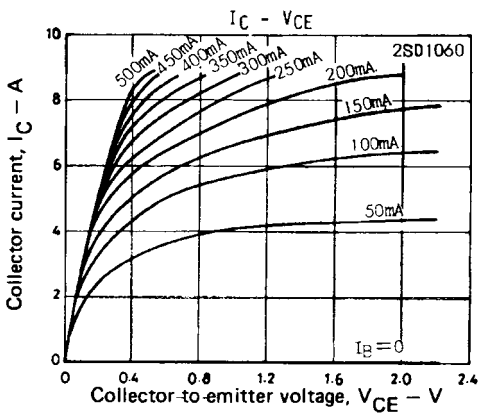
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-Off Current	I_{CBO}	V_{CB}=40V,I_E=0			0.1	mA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=4V,I_C=0			0.1	mA
DC Current Gain	hFE1 hFE2	V_{CE}=2V, I_C=1A V_{CE}=2V, I_C=3A,	70 30		360	
Gain bandwidth product	fT	V_{CE} =5V, I_C =1A		30		MHZ
Output Capacitance	Cob	V_{CB} =10V, f=1MHz		100		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C =3A, I_B =0.3A			0.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C =1mA, I_E =0	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C =1mA, R_{BE} =∞	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_C =0, I_E =1mA	6			V
Turn-ON Time	t_{ON}	See specified test circuit		0.1		μs
Storage Time	tstg	See specified test circuit		1.4		μs
Fall Time	tf	See specified test circuit		0.2		μs

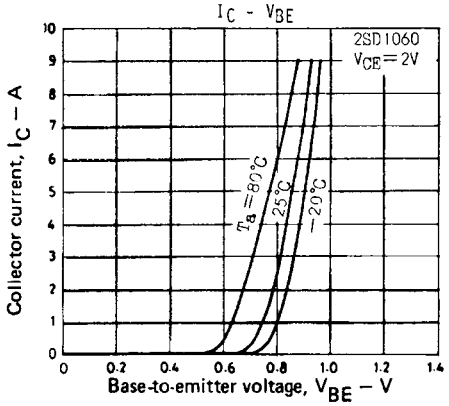
CLASSIFICATION of hFE1

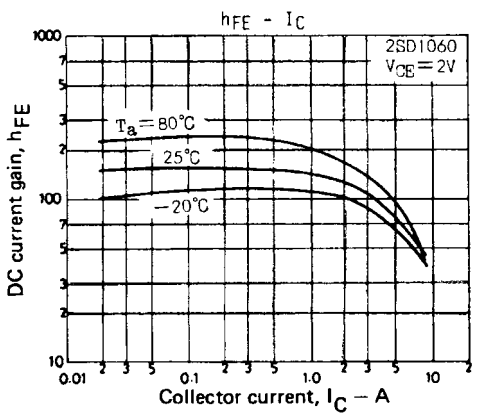
RANK	Q	R	S
RANGE	70-140	100-200	180-360

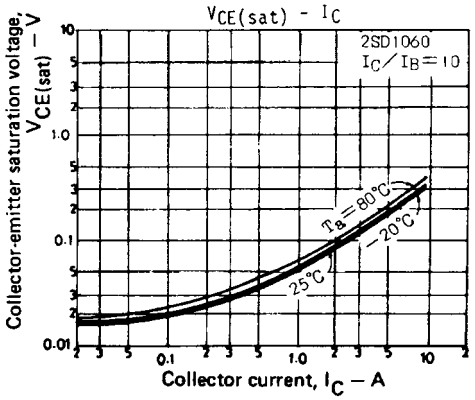
SWITCHING TIME TEST CIRCUIT

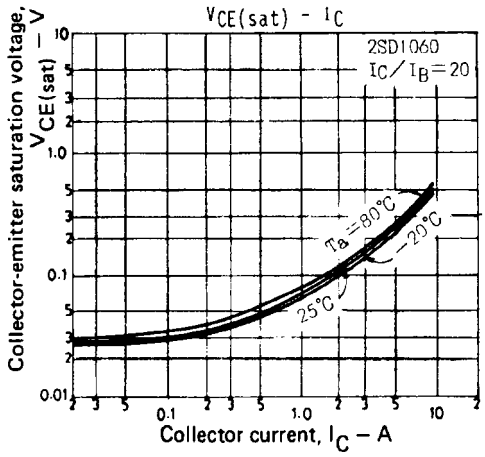


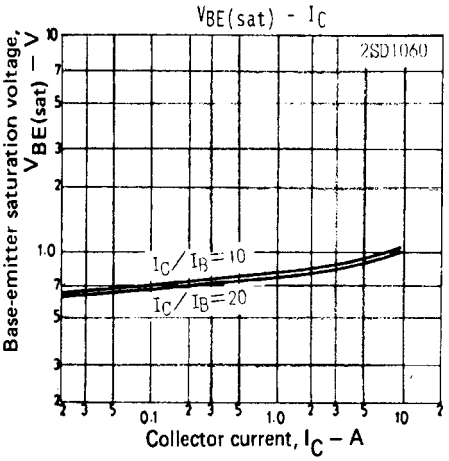


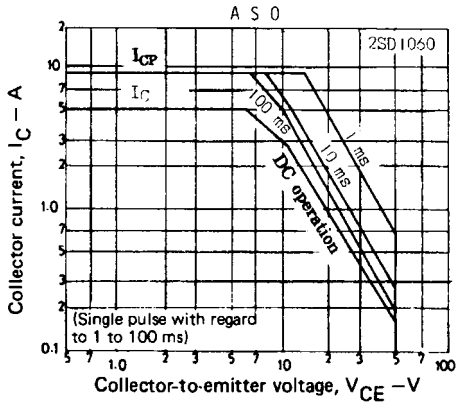


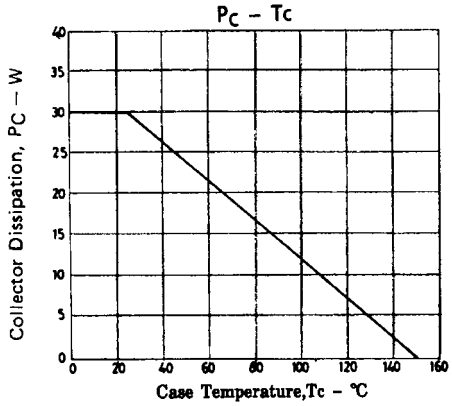

hFE - IC
2SD1060
VCE=2V
Ta=80°C
25°C
-20°C
DC current gain, hFE
Collector current, IC – A

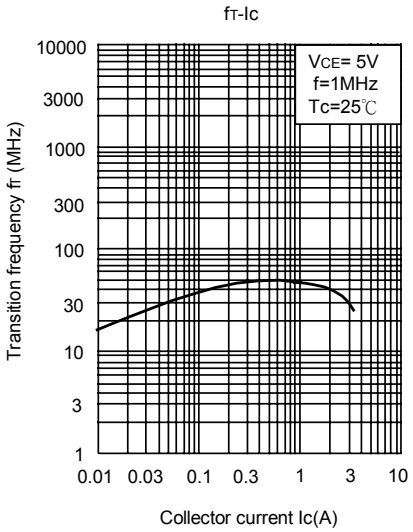

VCE(sat) - IC
2SD1060
IC/IB=10
Ta=80°C
-20°C
25°C
Collector-emitter saturation voltage, VCE(sat) – V
Collector current, IC – A


VCE(sat) - IC
2SD1060
IC/IB=20
Ta=80°C
-20°C
25°C
Collector-emitter saturation voltage, VCE(sat) – V
Collector current, IC – A


VBE(sat) - IC
2SD1060
IC/IB=10
IC/IB=20
Base-emitter saturation voltage, VBE(sat) – V
Collector current, IC – A


A S O
2SD1060
ICP
IC
100 ms
10 ms
1 ms
DC operation
(Single pulse with regard to 1 to 100 ms)
Collector current, IC – A
Collector-to-emitter voltage, VCE –V


PC - Tc
Collector Dissipation, PC – W
Case Temperature,Tc - °C


fT-Ic
VCE= 5V
f=1MHz
Tc=25℃
Transition frequency fT (MHz)
10000
3000
1000
300
100
30
10
3
1
0.01
0.03
0.1
0.3
1
3
10
Collector current Ic(A)