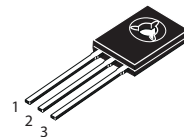


NPN Epitaxial Planar Transistors

 Lead(Pb)-Free

1. EMITTER
2. COLLECTOR
3. BASE



TO-18C

ABSOLUTE MAXIMUM RATINGS(TA=25°C)

Rating	Symbol	2SD669	2SD669A	Unit
Collector-Emitter Voltage	V_{CBO}	180	180	V
Collector-Base Voltage	V_{CEO}	120	160	V
Emitter-Base Voltage	V_{EBO}	5.0	5.0	V
Collector Current	I_C	1.5		A
Power Dissipation	P_D	1.0		W
Junction Temperature	T_j	150		°C
Storage , Temperature	T_{stg}	-55 to +150		°C

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted) (Continued)

Characteristics	Symbol	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage $I_C = 1.0\text{mA}$, $I_E = 0$	$V_{(BR)CBO}$	180	-	-	V
Collector-Base Breakdown Voltage $I_C = 10\text{mA}$, $I_B = 0$	$V_{(BR)CEO}$	120	-	-	V
2SD669 2SD669A		160			
Emitter-Base Breakdown Voltage $I_C = 0$, $I_E = 1.0\text{mA}$	$V_{(BR)EBO}$	5.0	-	-	V
Collector Cutoff Current $V_{CB} = 160\text{V}$, $I_E = 0$	I_{CBO}	-	-	10	μA
Emitter Cutoff Current $V_{EB} = 4.0\text{V}$, $I_C = 0$	I_{EBO}	-	-	10	mA

ON CHARACTERISTICS

DC Current Gain $V_{CE} = 5.0\text{V}$, $I_C = 150\text{mA}$	2SD669 2SD669A	$h_{FE(1)}$	60 60	-	320 200	-
		$h_{FE(2)}$	30	-	-	
Collector-Emitter Saturation Voltage $I_C = 500\text{mA}$, $I_B = 50\text{mA}$		$V_{CE(sat)}$	-	-	1.0	V
Base-Emitter ON Voltage $V_{CE} = 5.0\text{V}$, $I_C = 150\text{mA}$		$V_{BE(ON)}$	-	-	1.5	V
Transition frequency $V_{CE} = 5.0\text{V}$, $I_C = 150\text{mA}$		f_T	-	140	-	MHz
Collector Output Capacitance $V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$		C_{ob}	-	14	-	pF

CLASSIFICATION OF $h_{FE(1)}$

Rank		B	C	D
Range	2SD669	60-120	100-200	160-320
	2SD669A	60-120	100-200	-

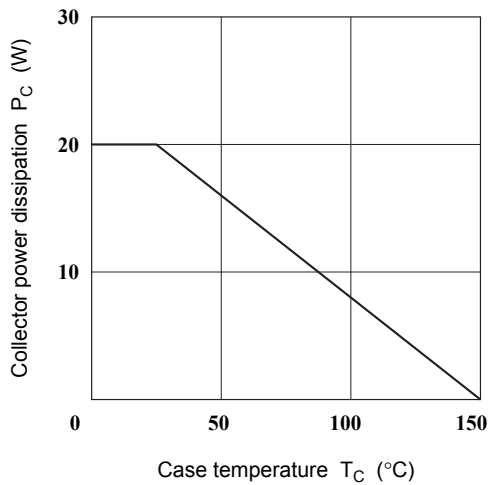


Fig.1 Maximum Collector Dissipation Curve

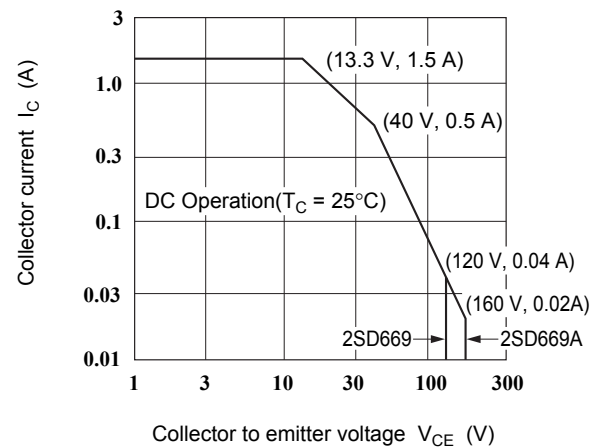


Fig.2 Area of Safe Operation

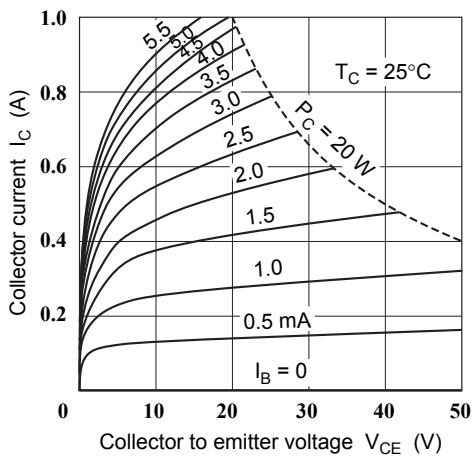


Fig.3 Typical Output Characteristics

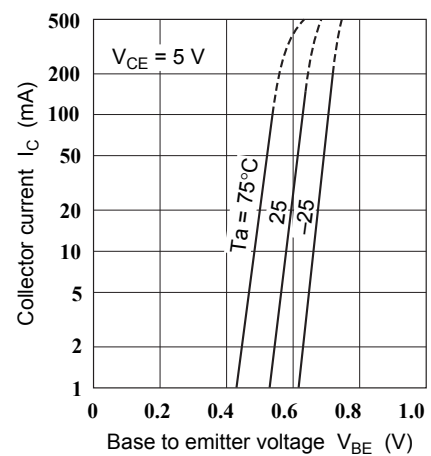


Fig.4 Typical Transfer Characteristics

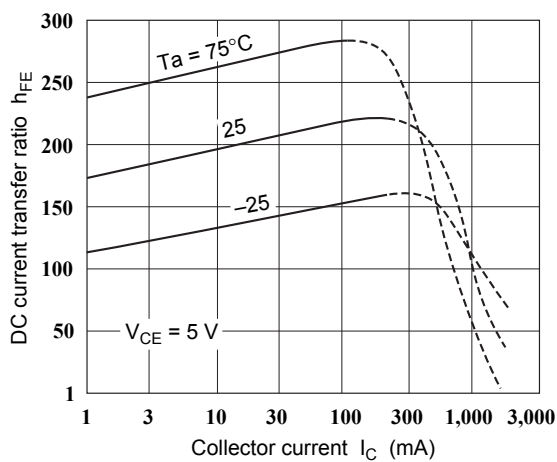


Fig.5 DC Current Transfer Ratio vs. Collector Current

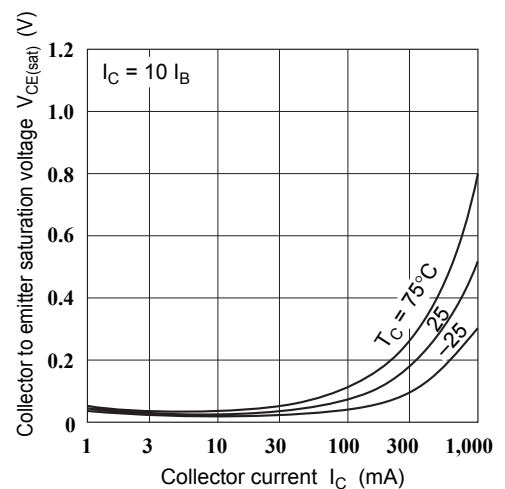


Fig.6 Collector to Emitter Saturation Voltage vs. Collector Current

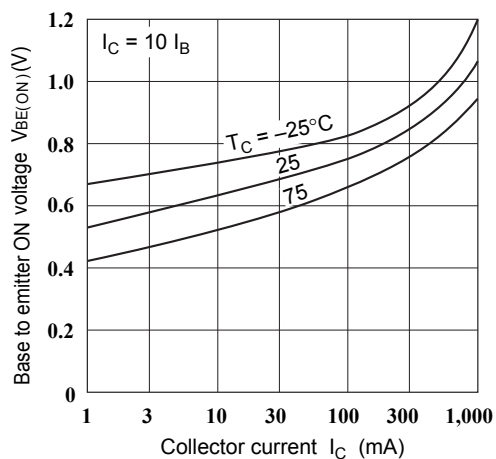


Fig.7 Base to Emitter ON Voltage vs. Collector Current

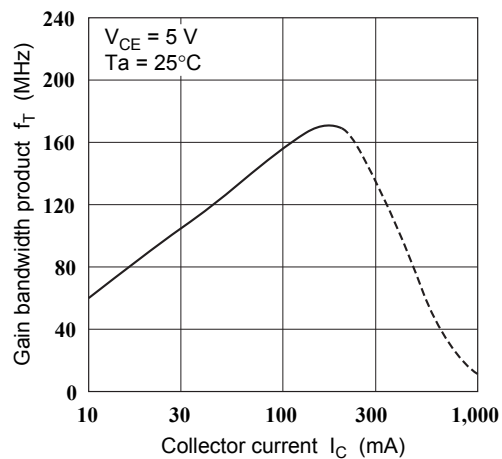


Fig.8 Gain Bandwidth Product vs. Collector Current

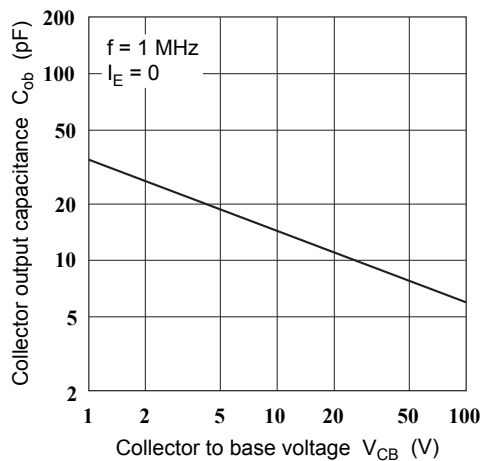
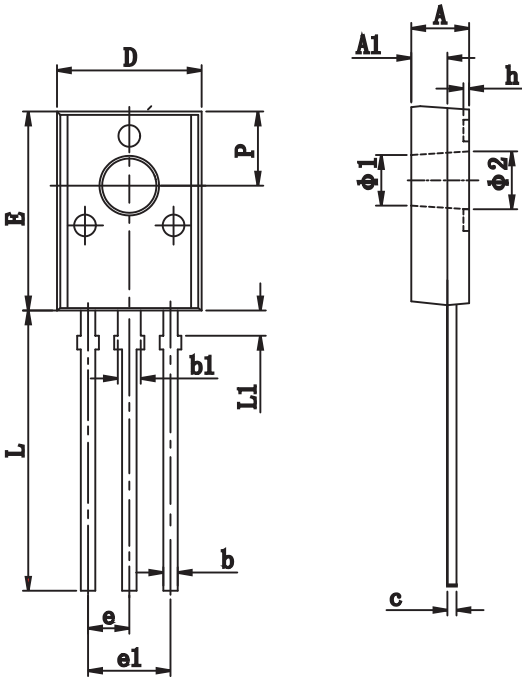


Fig.9 Collector Output Capacitance vs. Collector to Base Voltage

TO-126C Outline Dimensions

unit:mm



TO-126C		
Dim	Min	Max
A	3.000	3.400
A1	1.800	2.200
b	0.660	0.860
b1	1.170	1.370
c	0.450	0.600
D	7.800	8.200
E	10.800	11.200
e	2.280 TYP	
e1	4.460	4.660
L	15.100	15.500
L1	1.300	1.500
P	4.040	4.240
$\Phi 1$	2.700	2.900
$\Phi 2$	3.100	3.300