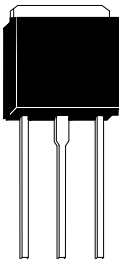
NPN Epitaxial Planar Transistor

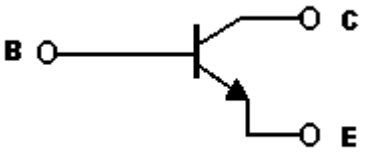
Features:

- Excellent H_{FE} Characteristics up to 1A
- Low Saturation Voltage, $V_{CE(sat)}$=0.11V(typ)@I_C=1A, I_B=50mA
- 5A peak pulse current
- Pb-free lead plating and halogen-free package

TO-251



B C E



B：Base
C：Collector
E：Emitter

BV_{CEO}	80V
I_C	2.5A
$R_{CES\ AT(MAX)}$	150mΩ

Ordering Information

Device	Package	Shipping
KWN1053I3	TO-251 (Pb-free lead plating and halogen-free package)	80 pcs/tube, 50 tubes/box

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current(DC)	I_C	2.5	A
Collector Current(Pulsed) (Note 1)	I_{CP}	5	
Power Dissipation @T_A=25℃	P_D	1.5	W
Power Dissipation @T_C=25℃		10	
Operating Junction Temperature and Storage Range	Tj ; Tstg	-55~+150	°C

Note 1: Single pulse, Pw≤300μs, Duty Cycle≤2%.

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	12.5	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	83.3	°C/W

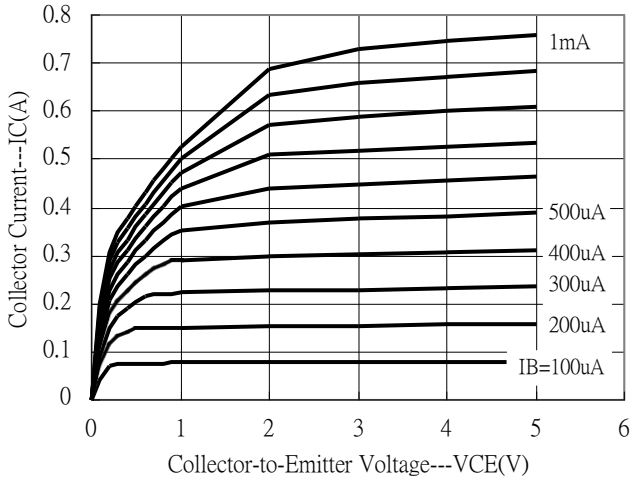
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	150	250	-	V	I_C=100μA
BV_{CES}	150	250		V	I_C=100μA
BV_{CEO}	80	110	-	V	I_C=10mA
BV_{EBO}	6	7.4	-	V	I_E=100μA
I_{CBO}	-	-	100	nA	V_{CB}=150V
I_{CES}	-	-	100	nA	V_{CE}=150V
I_{EBO}	-	-	100	nA	V_{EB}=5V
$V_{CE(sat)}$ 1 *	-	28	40	mV	I_C=200mA, I_B=20mA
$V_{CE(sat)}$ 2 *	-	80	150	mV	I_C=500mA, I_B=20mA
$V_{CE(sat)}$ 3 *	-	270	400	mV	I_C=1A, I_B=10mA
$V_{CE(sat)}$ 4 *	-	110	250	mV	I_C=1A, I_B=50mA
$V_{CE(sat)}$ 5 *	-	210	300	mV	I_C=2A, I_B=100mA
$V_{BE(sat)}$ *	-	0.9	1.2	V	I_C=1A, I_B=50mA
$V_{BE(on)}$ *	-	0.9	1.2	V	V_{CE}=2V, I_C=3A
h_{FE} 1 *	300	570	-	-	V_{CE}=2V, I_C=10mA
h_{FE} 2 *	300	550	820	-	V_{CE}=2V, I_C=500mA
h_{FE} 3 *	120	300	-	-	V_{CE}=2V, I_C=1A
h_{FE} 4 *	30	100	-	-	V_{CE}=2V, I_C=2A
f_T	-	140	-	MHz	V_{CE}=10V, I_C=50mA, f=100MHz
Cob	-	23	-	pF	V_{CB}=10V, I_E=0A,f=1MHz

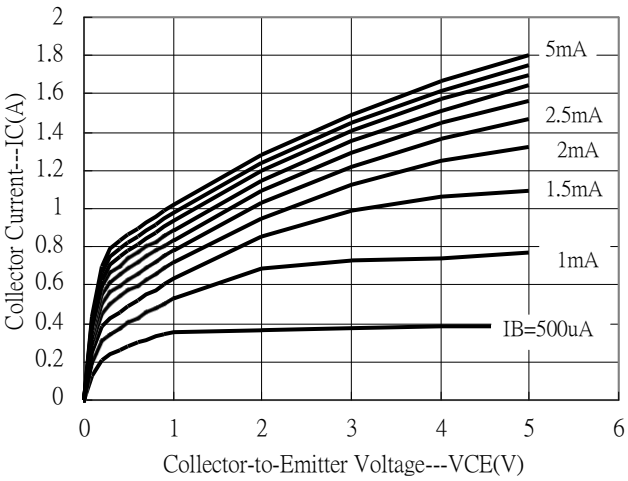
*Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

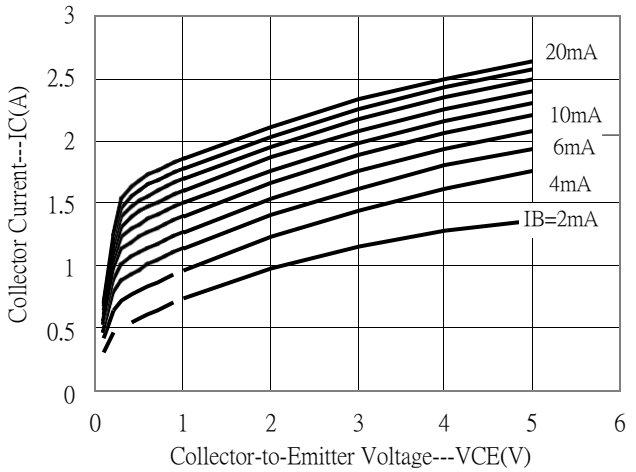
Emitter Grounded Output Characteristics



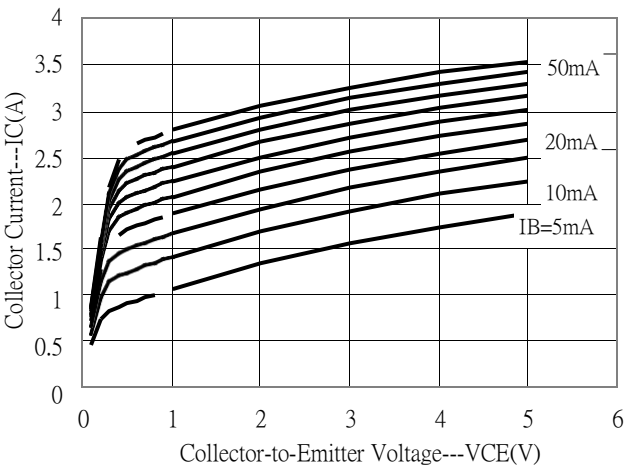
Emitter Grounded Output Characteristics



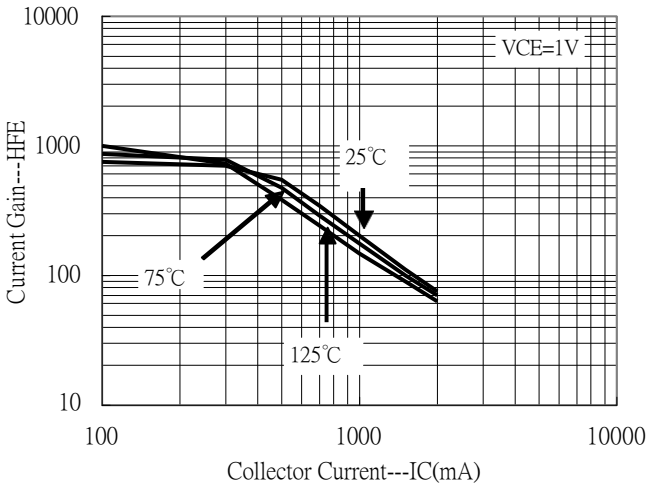
Emitter Grounded Output Characteristics



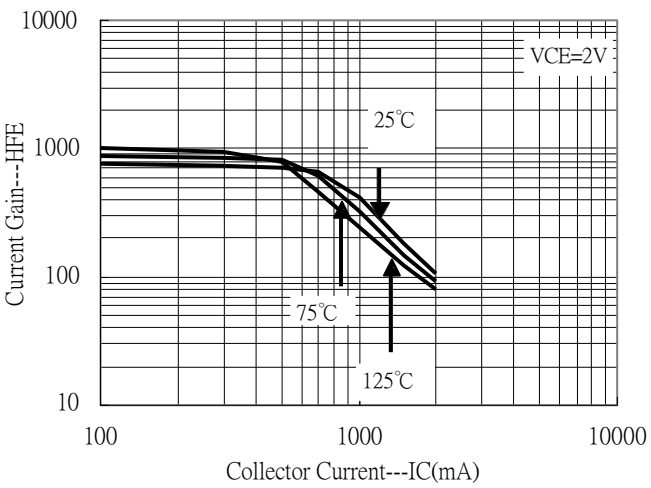
Emitter Grounded Output Characteristics



Current Gain vs Collector Current

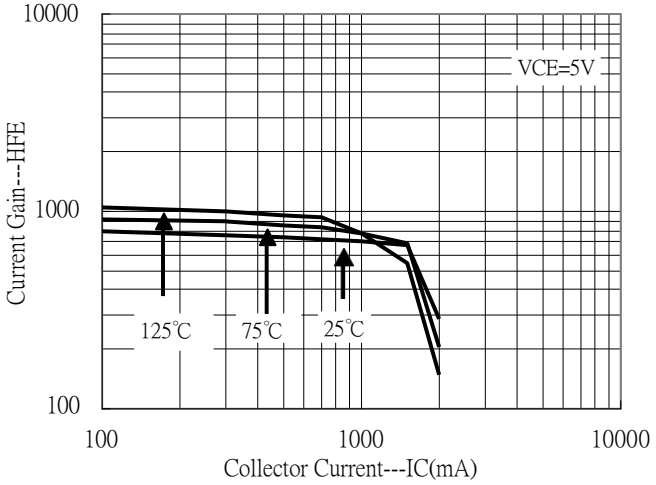


Current Gain vs Collector Current

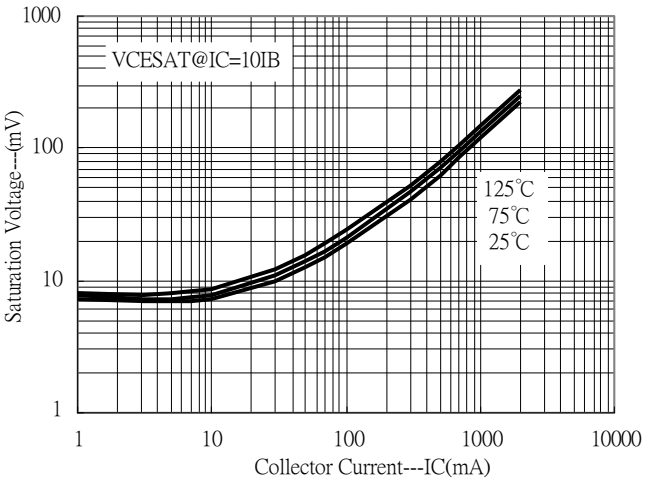


Typical Characteristics(Cont.)

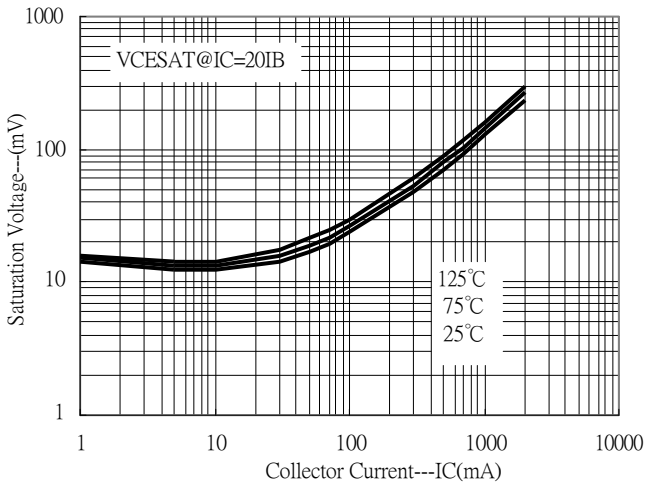
Current Gain vs Collector Current



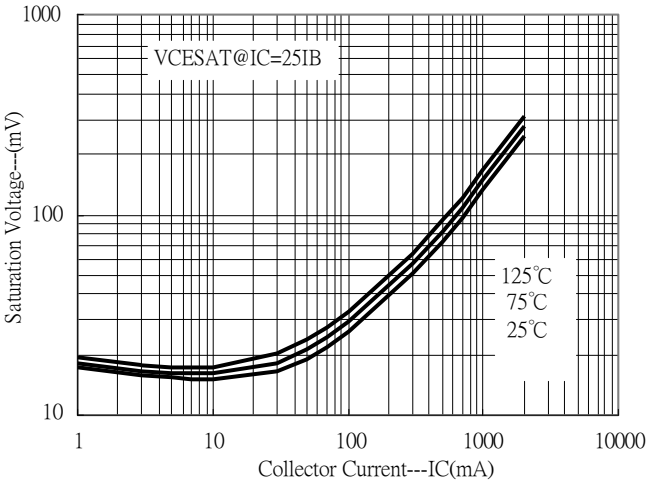
Saturation Voltage vs Collector Current



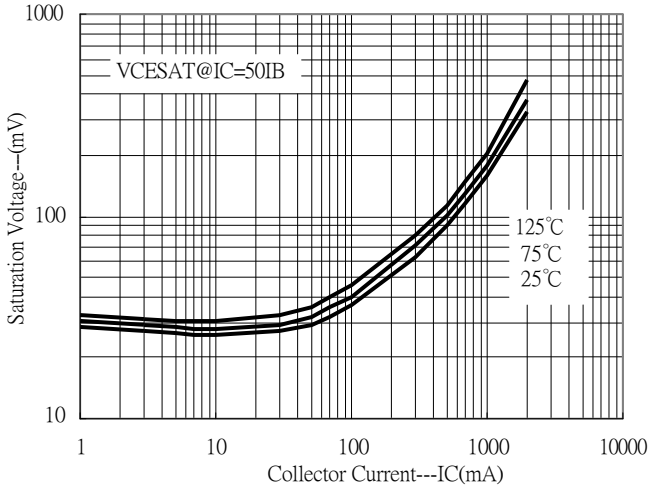
Saturation Voltage vs Collector Current



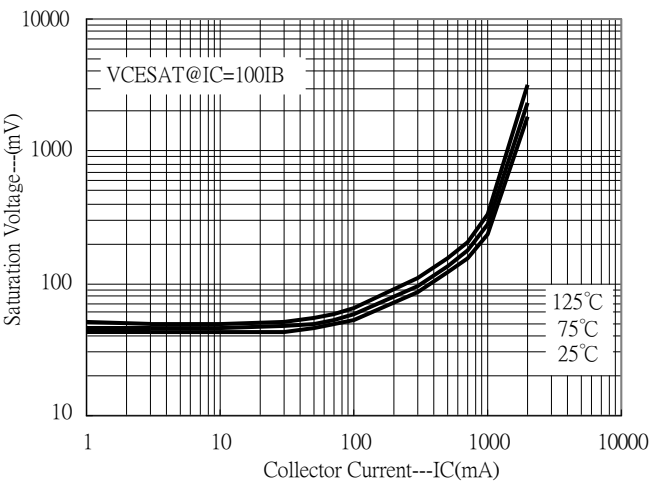
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current

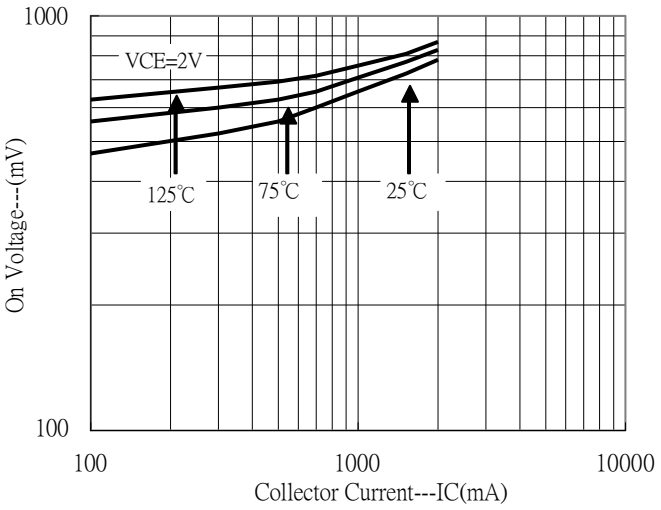


Saturation Voltage vs Collector Current

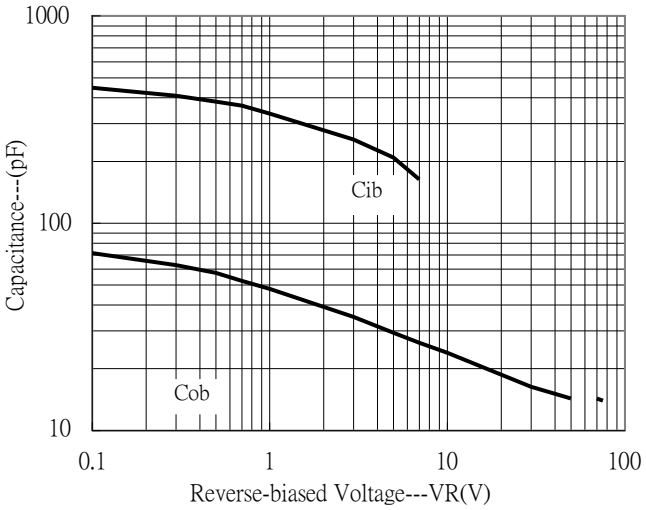


Typical Characteristics(Cont.)

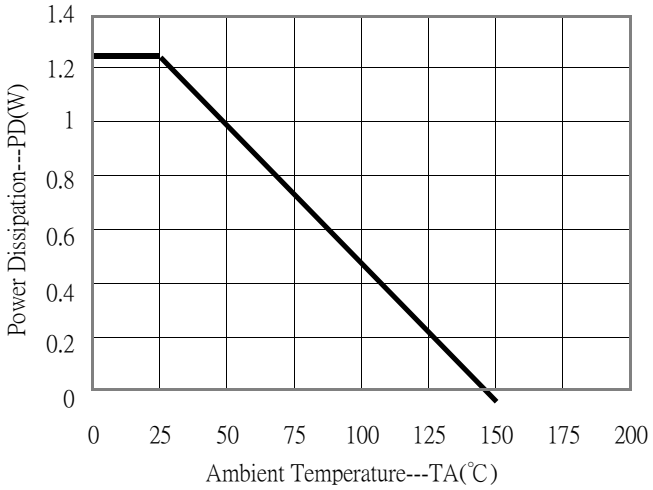
On Voltage vs Collector Current



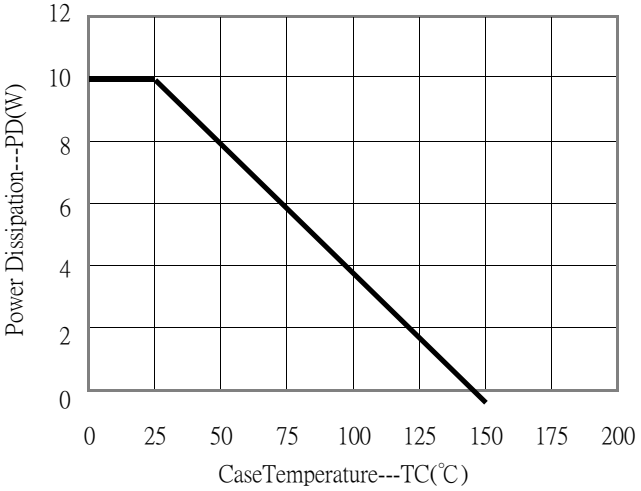
Capacitance vs Reverse-biased Voltage



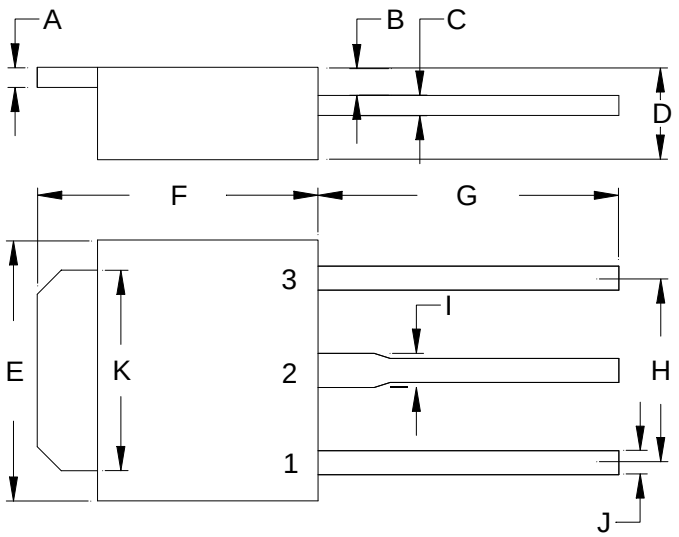
Power Derating Curve



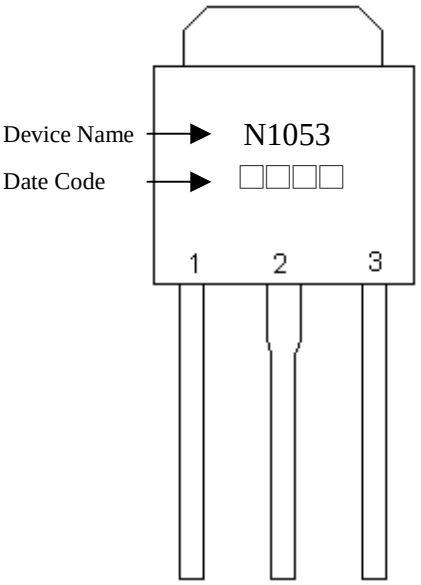
Power Derating Curve



TO-251 Dimension



Marking:



Style: Pin 1.Base 2.Collector 3.Emitter

3-Lead TO-251 Plastic Package
Package Code: I3

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0177	0.0217	0.45	0.55	G	0.2559	-	6.50	-
B	0.0354	0.0591	0.90	1.50	H	-	*0.1811	-	*4.60
C	0.0177	0.0236	0.45	0.60	I	-	0.0449	-	1.14
D	0.0866	0.0945	2.20	2.40	J	-	0.0346	-	0.88
E	0.2441	0.2677	6.20	6.80	K	0.2047	0.2165	5.20	5.50
F	0.2677	0.2835	6.80	7.20					