C1815 TRANSISTOR (NPN)

1.BASE
2.COLLECTOR
3.EMITTER

SOT-23-3

FEATURES

Power dissipation

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

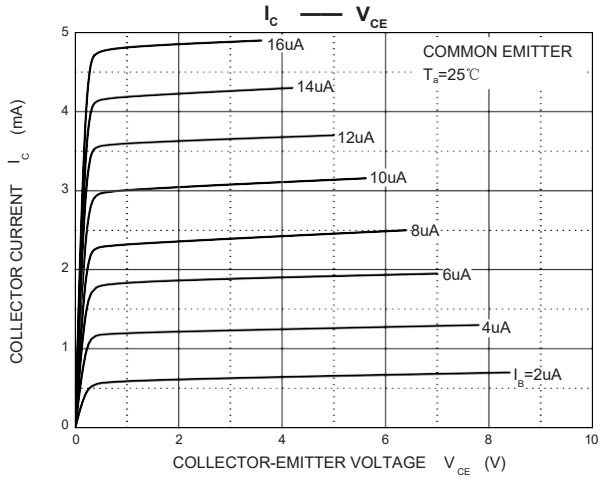
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	50	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current	150	mA
P_C	Collector Power Dissipation	200	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	625	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55～+150	℃

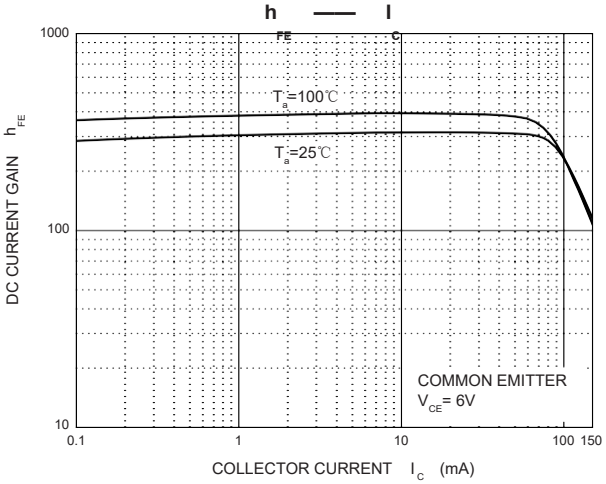
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

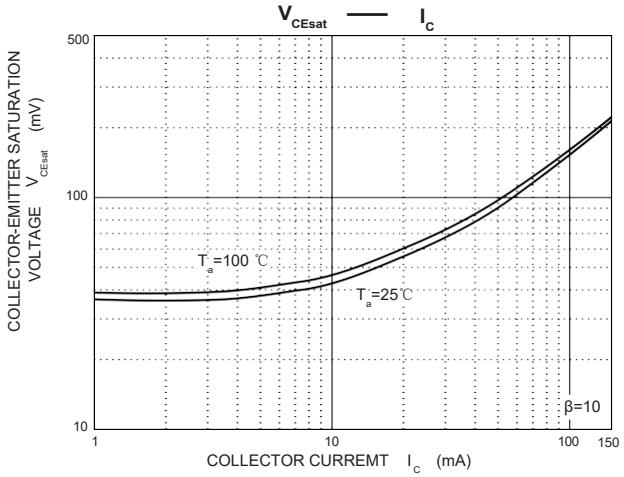
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 100uA, I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 0.1mA, I_B=0	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 100uA, I_C=0	5			V
Collector cut-off current	I_{CBO}	V_{CB}=60V, I_E=0			0.1	uA
Emitter cut-off current	I_{EBO}	V_{EB}= 5V, I_C=0			0.1	uA
DC current gain	h_{FE}	V_{CE}= 6V, I_C= 2mA	120		400	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=100mA, I_B= 10mA			0.25	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=100mA, I_B= 10mA			1	V
Transition frequency	f_T	V_{CE}=10V, I_C= 1mA, f=30MHz	80			MHz

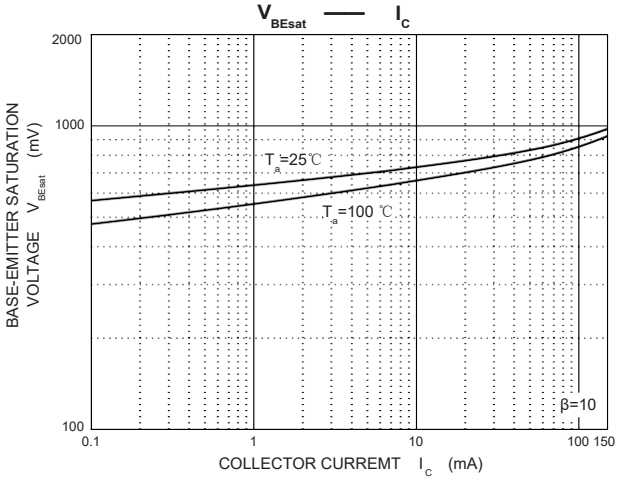
CLASSIFICATION OF h_{FE}

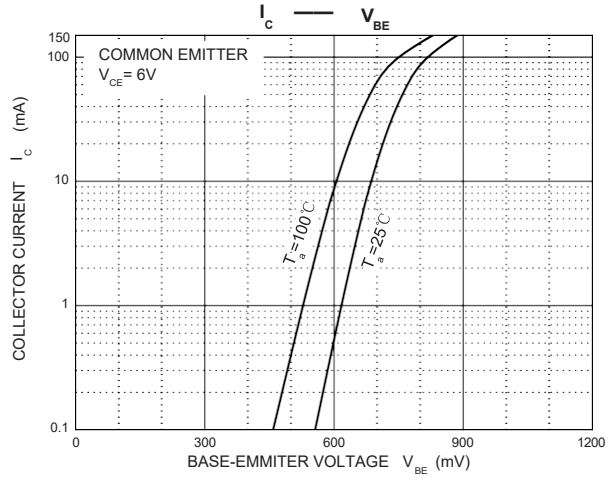
Rank	L	H
Range	120-240	200-400

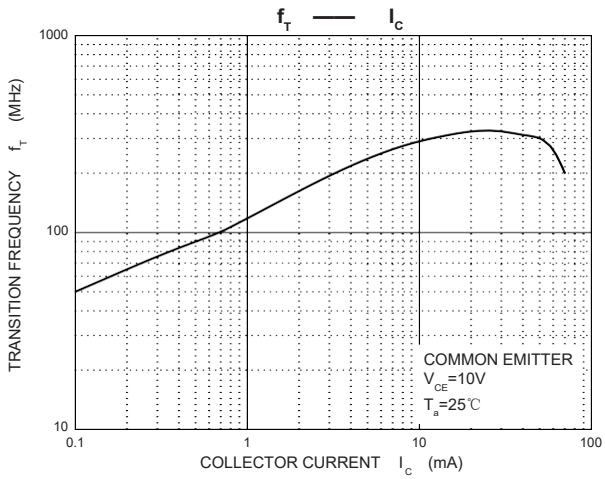

I_C — V_{CE}
COMMON EMITTER
T_a=25℃
16uA
14uA
12uA
10uA
8uA
6uA
4uA
I_B=2uA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

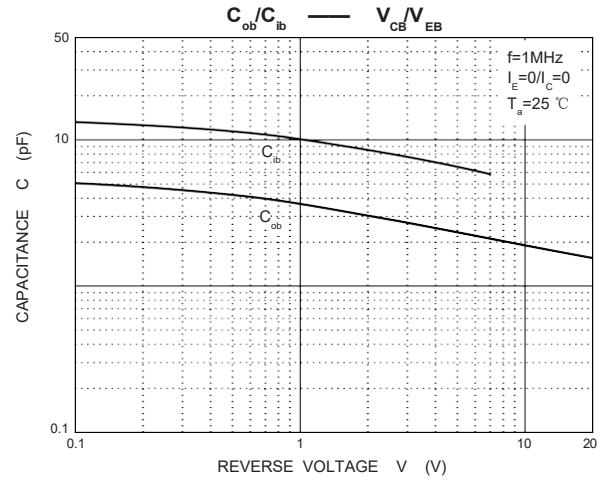

h_{FE} — I_C
T_a=100℃
T_a=25℃
COMMON EMITTER
V_{CE}= 6V
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)

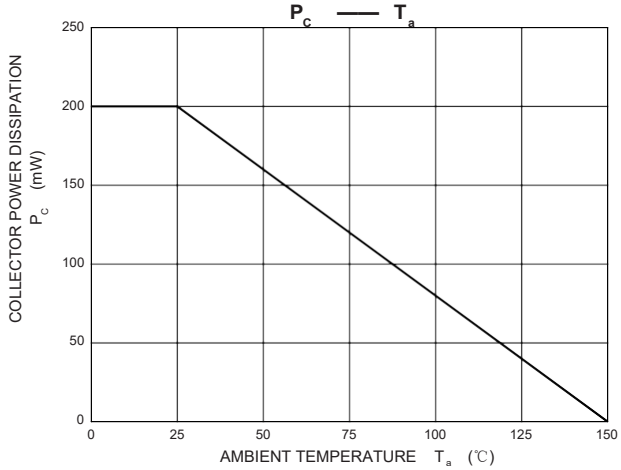

V_{CEsat} — I_C
T_a=100 ℃
T_a=25℃
β=10
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
COLLECTOR CURREMT I_C (mA)


V_{BEsat} — I_C
T_a=25℃
T_a=100 ℃
β=10
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
COLLECTOR CURREMT I_C (mA)


I_C — V_{BE}
COMMON EMITTER
V_{CE}= 6V
T_a=100℃
T_a=25℃
COLLECTOR CURRENT I_C (mA)
BASE-EMMITER VOLTAGE V_{BE} (mV)


f_T — I_C
COMMON EMITTER
V_{CE}=10V
T_a=25℃
TRANSITION FREQUENCY f_T (MHz)
COLLECTOR CURRENT I_C (mA)


C_{ob}/C_{ib} — V_{CB}/V_{EB}
f=1MHz
I_E=0/I_C=0
T_a=25 ℃
C_{ib}
C_{ob}
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


P_C — T_a
COLLECTOR POWER DISSIPATION P_C (mW)
AMBIENT TEMPERATURE T_a (℃)