KTD2058 TRANSISTOR (NPN)

TO-220F

1.BASE

2.COLLECTOR

3.EMITTER

FEATURES

- **Low Collector Saturation Voltage**

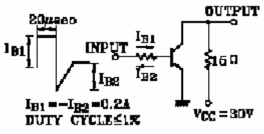
  $V_{CE(SAT)}$ = 1. 0V(MAX) .

MAXIMUM RATINGS*(T_A=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	60	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current -Continuous	3	A
P_C	Collector Power Dissipation	2	W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

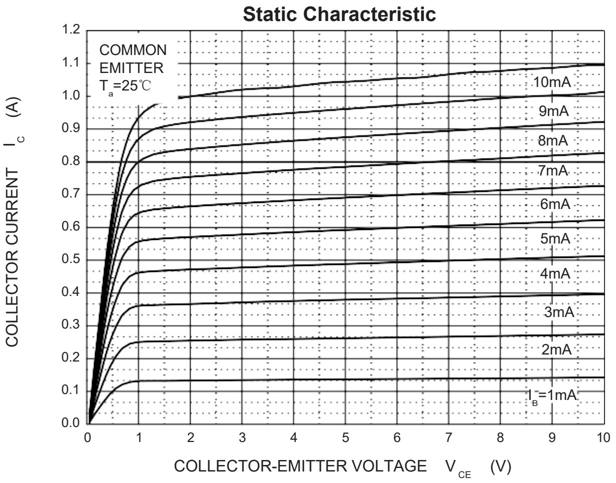
*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

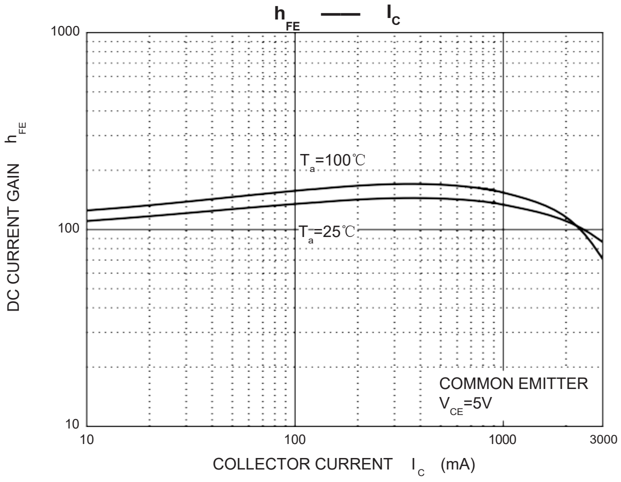
ELECTRICALCHARACTERISTICS(Ta=25℃ unless otherwise specified)

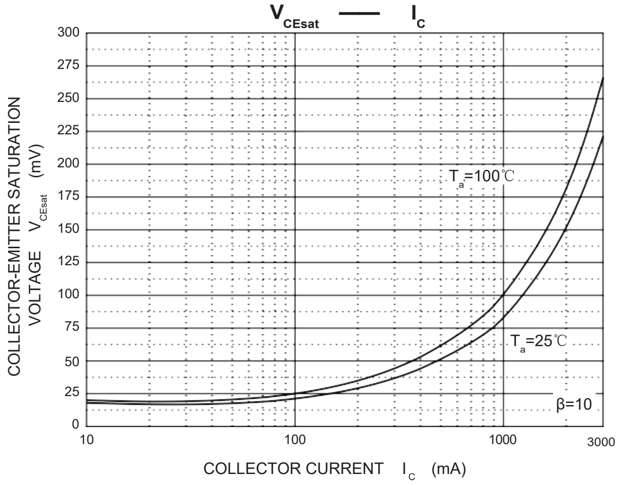
Parameter		Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage		$V_{(BR)CBO}$	Ic=100μA, I_E=0	60			V
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	Ic=50mA, I_B=0	60			V
Emitter-base breakdown voltage		$V_{(BR)EBO}$	I_E=100 μA, I_C=0	7			V
Collector cut-off current		I_{CBO}	V_{CB}=60V, I_E=0			100	μA
Emitter cut-off current		I_{EBO}	V_{EB}=7V, I_C=0			100	μA
DC current gain		$h_{FE(1)}$	V_{CE}=5V, I_C=0.5A	60		200	
Collector-emitter saturation voltage		$V_{CE(sat)}$	I_C=2A, I_B=0.2A			1	V
Base-emitter voltage		$V_{BE(on)}$	V_{CE}=5V, I_C=0.5A			1	V
Transition frequency		f_T	V_{CE}=5V, I_C=0.5A		3		MHz
Collector output capacitance		C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		35		pF
Switching time	**Turn-on Time**	t_{on}			0.65		us
	Storage Time	t_{stg}			1.3		
	Fall Time	t_f			0.65		

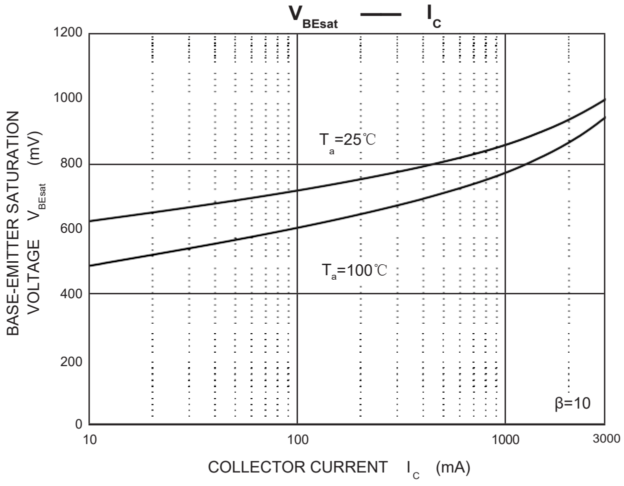
CLASSIFICATION of $h_{FE(1)}$

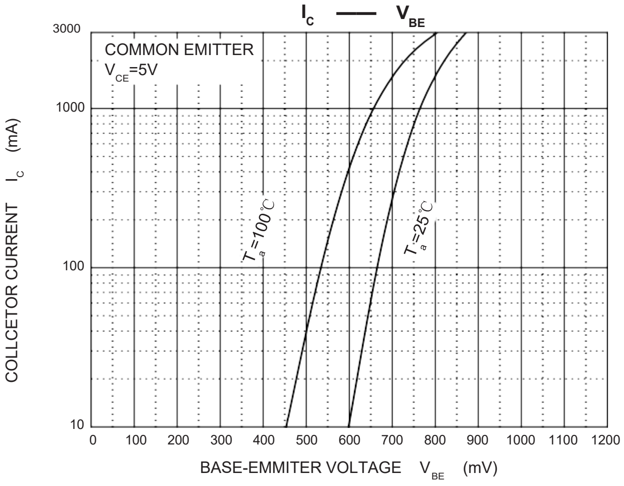
Rank	O	Y
Range	60-120	100-200

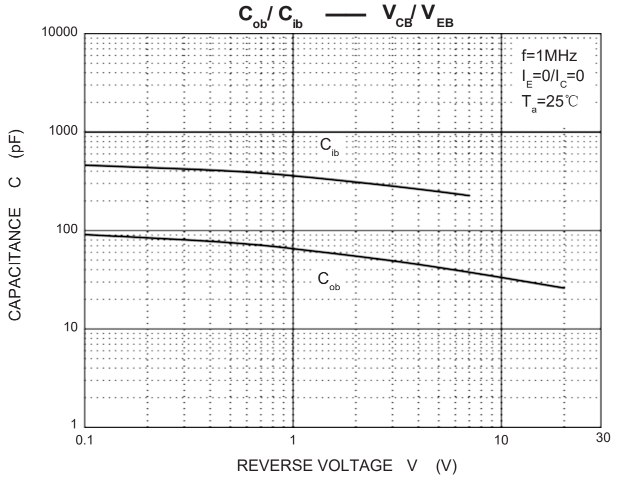

Static Characteristic
COMMON
EMITTER
T a =25℃
10mA
9mA
8mA
7mA
6mA
5mA
4mA
3mA
2mA
I B =1mA
COLLECTOR CURRENT I C (A)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
0
1
2
3
4
5
6
7
8
9
10
COLLECTOR-EMITTER VOLTAGE V CE (V)

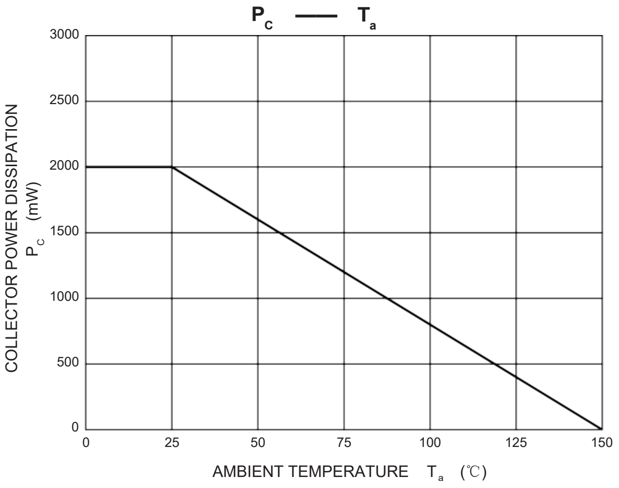

h FE — I C
DC CURRENT GAIN h FE
1000
100
10
T a =100℃
T a =25℃
COMMON EMITTER
V CE =5V
10
100
1000
3000
COLLECTOR CURRENT I C (mA)


V CEsat — I C
COLLECTOR-EMITTER SATURATION VOLTAGE V CEsat (mV)
300
275
250
225
200
175
150
125
100
75
50
25
0
T a =100℃
T a =25℃
β=10
10
100
1000
3000
COLLECTOR CURRENT I C (mA)


V BEsat — I C
BASE-EMITTER SATURATION VOLTAGE V BEsat (mV)
1200
1000
800
600
400
200
0
T a =25℃
T a =100℃
β=10
10
100
1000
3000
COLLECTOR CURRENT I C (mA)


I C — V BE
COMMON EMITTER
V CE =5V
COLLCETOR CURRENT I C (mA)
3000
1000
100
10
T a =100℃
T a =25℃
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
BASE-EMMITER VOLTAGE V BE (mV)


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)
10000
1000
100
10
1
0.1
1
10
30
REVERSE VOLTAGE V (V)


P C — T a
COLLECTOR POWER DISSIPATION P C (mW)
3000
2500
2000
1500
1000
500
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T a (℃)