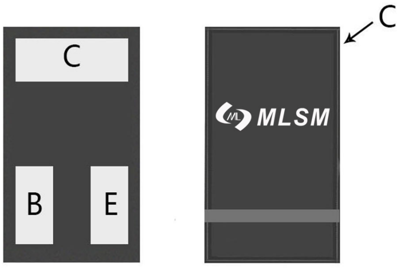
MLSM
MICROELECTRONICS

TP847LED03

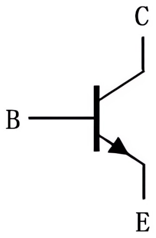
Transistor(NPN)

Features

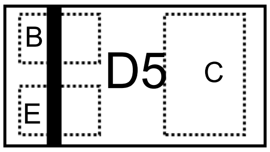
- Low Current
- Low Voltage
- Ultra Small SMD Plastic Package
- Complementary to TP857LED03
- For General-purpose Switching and Amplification



DFN1006-3L top view



Schematic diagram



Marking and pin assignment

Pb-Free RoHS Halogen-Free

Maximum Ratings(Ta=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	50	V
V_{CEO}	Collector-Emitter Voltage	45	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	100	mA
P_C	Collector Power Dissipation	100	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	1250	°C/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	°C

Ordering Information (Example)

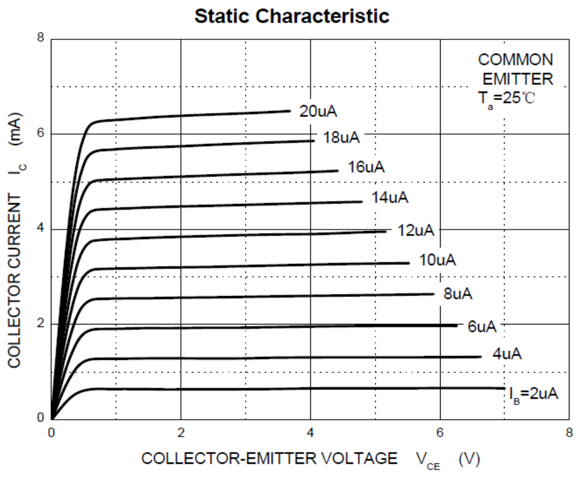
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
TP847LED03	DFN1006-3L	D5	10,000	150,000	600,000	7"reel

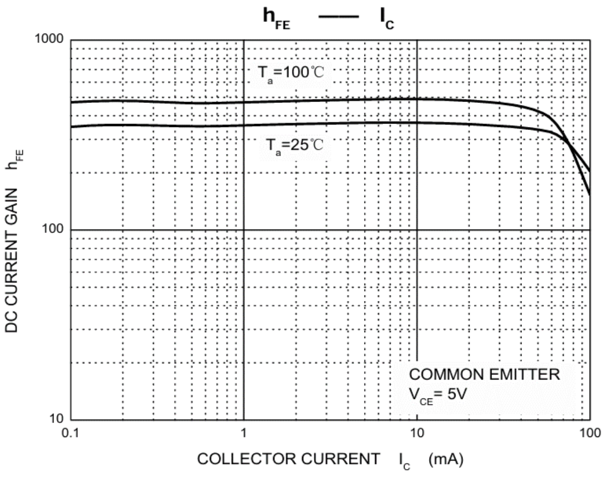
Electrical Characteristics (TJ=25℃ unless otherwise noted)

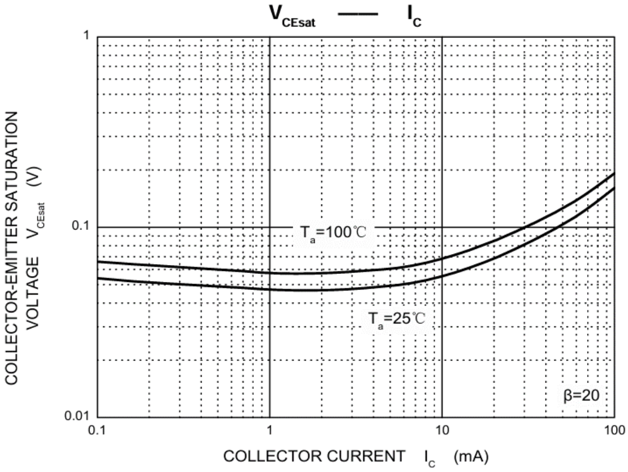
Symbol	Parameter	Condition	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	I_C=10μA, I_E=0	50	--	--	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C=10mA, I_B=0	45	--	--	V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	I_E=10μA, I_C=0	6	--	--	V
I_{CBO}	Collector cut-off current	V_{CB}=30V , I_E=0	--	--	15	nA
I_{EBO}	Emitter cut-off current	V_{CB}=5V , I_C=0	--	--	15	nA
h_{FE}^{*}	DC current gain	V_{CE}=5V, I_C=2mA	110	--	220	
			220	--	475	
$V_{CE(sat)1}^{*}$	Collector-emitter saturation voltage	I_C=10mA, I_B=0.5mA	--	--	0.2	V
$V_{CE(sat)2}^{*}$		I_C=100mA, I_B=5mA	--	--	0.4	V
$V_{BE(sat)1}^{*}$	Base-emitter saturation voltage	I_C=10 mA, I_B=0.5mA	--	0.7	--	V
$V_{BE(sat)2}^{*}$		I_C=-100mA, I_B=5mA	--	0.9	--	V
V_{BE1}^{*}	Base-emittervoltage	V_{CE}=5V,I_C=2mA	--	--	0.7	V
V_{BE2}^{*}		V_{CE}=5V,I_C=10mA	--	--	0.77	V
f_T	Transition frequency	V_{CE}=5V,I_C=10mA,f=100MHz	100	--	--	MHz
C_{ob}	Collectoroutputcapacitance	V_{CB}=10V, I_E=0, f=1MHz	--	2.5	--	pF
NF	Noisefigure	V_{CE}=5V,I_E=0.2mA,f=1kHz, R_S=1kΩ,B=200Hz	--	10	--	dB

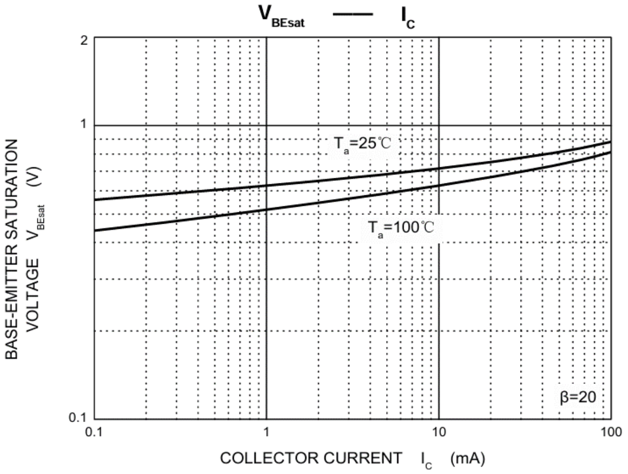
*Pulsetest:pulsewidth≤300μs,dutycycle≤2.0%.

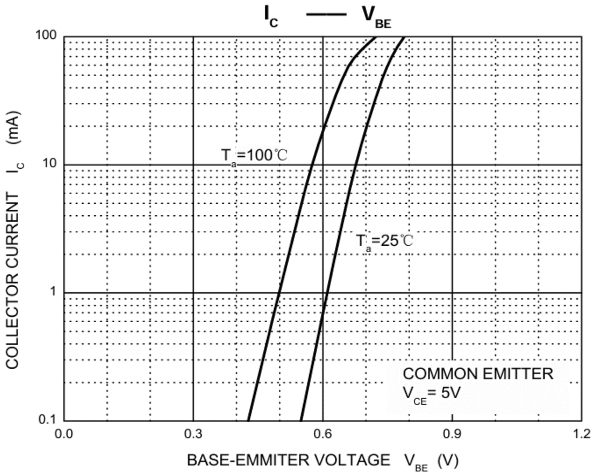
Typical Operating Characteristics

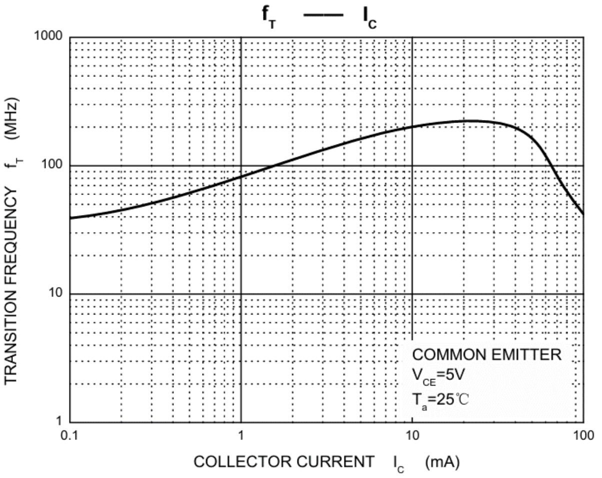


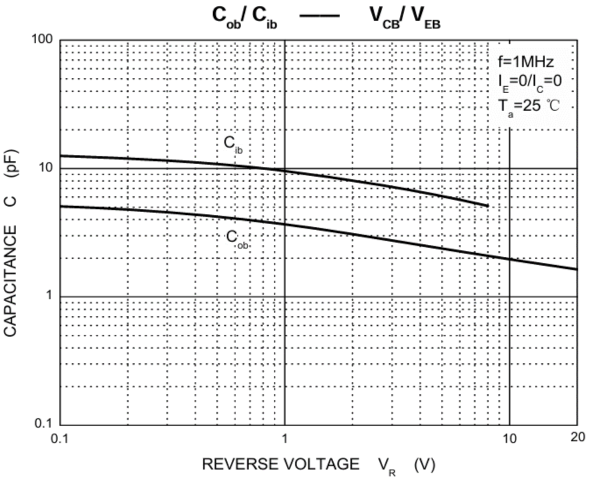


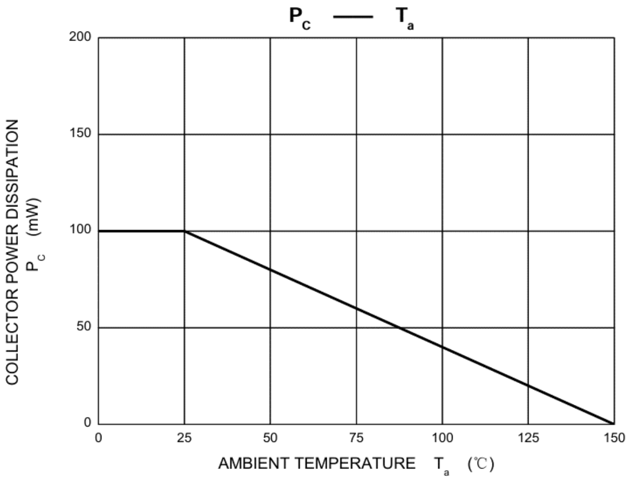

V_{CEsat} —— I_C
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (V)
1
0.1
0.01
T_a=100℃
T_a=25℃
β=20
0.1
1
10
100
COLLECTOR CURRENT I_C (mA)


V_{BEsat} —— I_C
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (V)
2
1
0.1
T_a=25℃
T_a=100℃
β=20
0.1
1
10
100
COLLECTOR CURRENT I_C (mA)

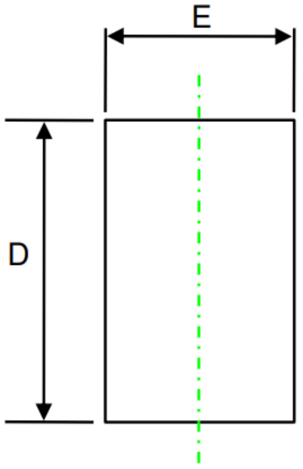

I_C —— V_{BE}
COLLECTOR CURRENT I_C (mA)
100
10
1
0.1
T_a=100℃
T_a=25℃
COMMON EMITTER
V_{CE}= 5V
0.0
0.3
0.6
0.9
1.2
BASE-EMMITER VOLTAGE V_{BE} (V)


f_T —— I_C
TRANSITION FREQUENCY f_T (MHz)
1000
100
10
1
COMMON EMITTER
V_{CE}=5V
T_a=25℃
0.1
1
10
100
COLLECTOR CURRENT I_C (mA)

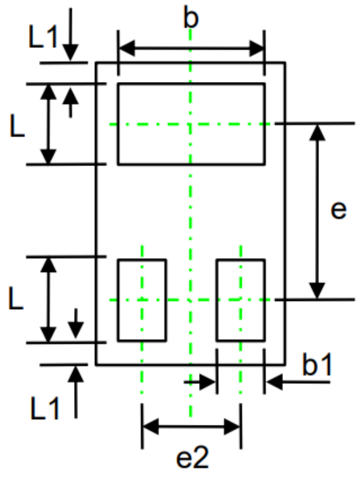

C_{ob}/ C_{ib} —— V_{CB}/ V_{EB}
CAPACITANCE C (pF)
100
10
1
0.1
f=1MHz
I_E=0/I_C=0
T_a=25 ℃
C_{ib}
C_{ob}
0.1
1
10
20
REVERSE VOLTAGE V_R (V)


P_C —— T_a
COLLECTOR POWER DISSIPATION P_C (mW)
200
150
100
50
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T_a (℃)

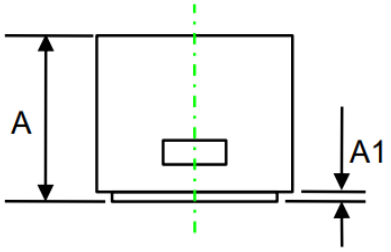
DFN1006-3L Package information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.450	0.550	0.017	0.021
A1	0.000	0.030	0.000	0.001
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.021	0.025
b	0.470	0.550	0.018	0.021
e	0.65TYP		0.025TYP	
e2	0.35TYP		0.013TYP	
L1	0.05TYP		0.001TYP	
L	0.220	0.300	0.008	0.012
b1	0.110	0.190	0.004	0.007