

isc Silicon NPN Darlington Power Transistor

TIP142

DESCRIPTION

- High DC Current Gain-
: $h_{FE} = 1000(\text{Min}) @ I_C = 5A$
- Collector-Emitter Sustaining Voltage-
: $V_{CEO(\text{SUS})} = 100V(\text{Min})$
- Complement to Type TIP147
- 100% tested
- Minimum Lot-to-Lot variations for robust device performance and reliable operation.

APPLICATIONS

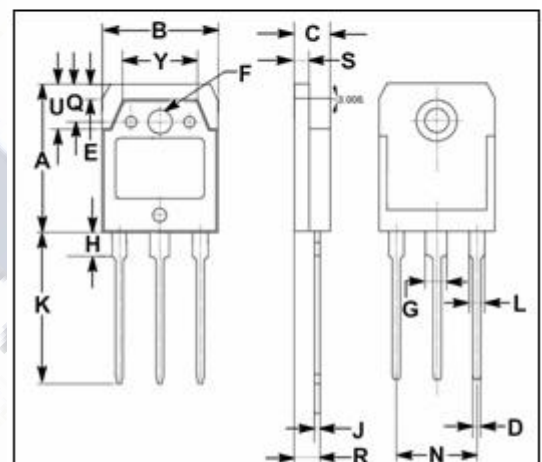
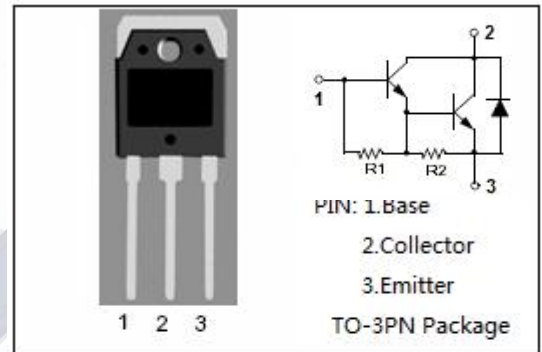
- Designed for general purpose amplifier and low frequency switching applications.

ABSOLUTE MAXIMUM RATINGS($T_a = 25^\circ\text{C}$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	100	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current-Continuous	10	A
I_{CM}	Collector Current-Peak	15	A
I_B	Base Current- Continuous	0.5	A
P_C	Collector Power Dissipation @ $T_C = 25^\circ\text{C}$	125	W
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65~150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	1.0	$^\circ\text{C/W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	35.7	$^\circ\text{C/W}$



DIM	mm	
	MIN	MAX
A	19.60	20.30
B	15.50	15.70
C	4.70	4.90
D	0.90	1.10
E	1.90	2.10
F	3.40	3.60
G	2.90	3.20
H	3.20	3.40
J	0.595	0.605
K	19.80	20.70
L	1.90	2.20
N	10.89	10.91
Q	4.90	5.10
R	3.35	3.45
S	1.995	2.100
U	5.90	6.20
Y	9.90	10.10

isc Silicon NPN Darlington Power Transistor**TIP142****ELECTRICAL CHARACTERISTICS****T_C=25°C unless otherwise specified**

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{CEQ(SUS)}	Collector-Emitter Sustaining Voltage	I _C = 30mA, I _B = 0	100			V
V _{CE(sat)-1}	Collector-Emitter Saturation Voltage	I _C = 5A ,I _B = 10mA			2.0	V
V _{CE(sat)-2}	Collector-Emitter Saturation Voltage	I _C = 10A ,I _B = 40mA			3.0	V
V _{BE(sat)}	Base-Emitter Saturation Voltage	I _C = 10A ,I _B = 40mA			3.5	V
V _{BE(on)}	Base-Emitter On Voltage	I _C = 10A ; V _{CE} = 4V			3.0	V
I _{CBO}	Collector Cutoff current	V _{CB} = 100V, I _E = 0			1	mA
I _{CEO}	Collector Cutoff current	V _{CE} = 50V, I _B = 0			2	mA
I _{EBO}	Emitter Cutoff Current	V _{EB} = 5V; I _C = 0			2	mA
h _{FE-1}	DC Current Gain	I _C = 5A ; V _{CE} = 4V	1000			
h _{FE-2}	DC Current Gain	I _C = 10A ; V _{CE} = 4V	500			

Switching Times

t _d	Delay Time	V _{CC} = 30 V, I _C = 5.0 A, I _B = 20 mA; Duty Cycle ≤ 20% I _{B1} = I _{B2} , R _C & R _B Varied, T _J = 25°C		0.15		μ s
t _r	Rise Time			0.55		μ s
t _{stg}	Storage Time			2.5		μ s
t _f	Fall Time			2.5		μ s