

SPTECH Silicon NPN Darlington Power Transistor

TIP160

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 320V(\text{Min})$
- Low Collector-Emitter Saturation Voltage-
: $V_{CE(sat)} = 2.9V(\text{Max.}) @ I_C = 10A$

APPLICATIONS

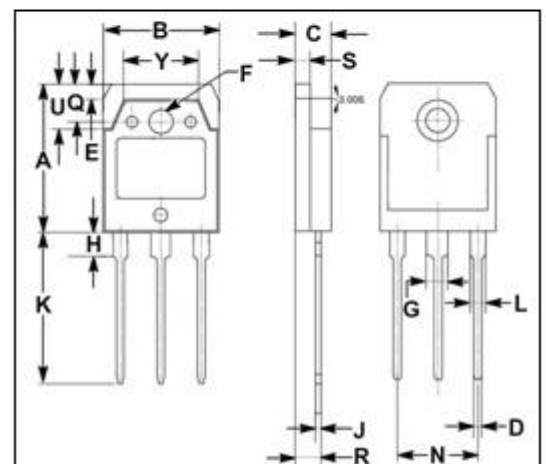
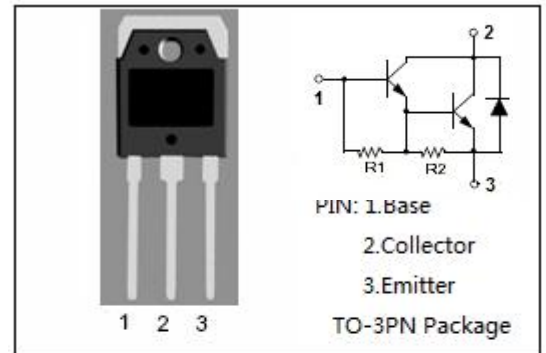
- Designed for use in automotive ignition, switching and motor control applications.

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	320	V
V_{CEO}	Collector-Emitter Voltage	320	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	1.0	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	$^\circ\text{C/W}$



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

ELECTRICAL CHARACTERISTICS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C= 6.5A, I_B= 0.1A$			2.8	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C= 10A, I_B= 1A$			2.9	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C= 6.5A, I_B= 0.1A$			2.2	V
I_{CEO}	Collector Cutoff current	$V_{CE}= 320V, I_B= 0$			1.0	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB}= 5V; I_C= 0$			10	mA
h_{FE}	DC Current Gain	$I_C= 4A; V_{CE}= 2.2V$	200			
V_F	C-E Diode Forward Voltage	$I_F= 10A$			3.5	V

Switching Times

t_d	Delay Time	$V_{CC} = 33V, I_C = 6.5A,$ $I_{B1} = -I_{B2} = 100mA;$ $t_p = 20 \mu s; \text{Duty Cycle} \leq 2\%$		0.3		μs
t_r	Rise Time			1.5		μs
t_{stg}	Storage Time			2.3		μs
t_f	Fall Time			2.8		μs