

isc Silicon NPN Power Transistor

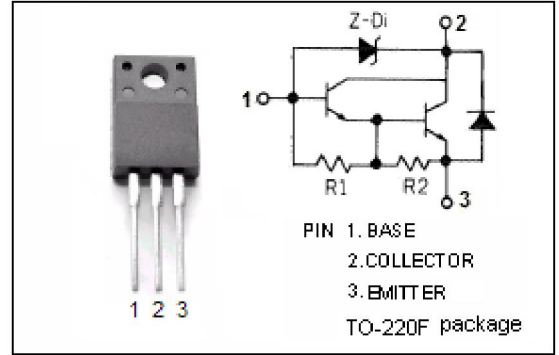
2SC4005

DESCRIPTION

- High DC current gain.
- Large current capacity and wide ASO.
- On-chip Zener diode of $50 \pm 8V$ between collector and base.
- Large inductive load handling capability.
- Micaless package facilitating mounting.

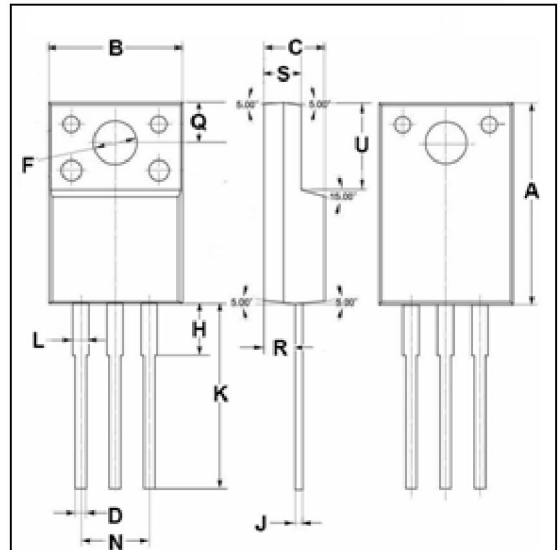
APPLICATIONS

- Designed for use in switching of L load (motor drivers, printer hammer drivers, relay drivers).



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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	42	V
V_{CEO}	Collector-Emitter Voltage	42	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current-Continuous	2	A
I_{CM}	Collector Current-Pulse	4	A
I_B	Base Current-Continuous	0.4	A
P_T	Total Power Dissipation @ $T_C=25^\circ C$	15	W
	Total Power Dissipation @ $T_a=25^\circ C$	2.0	
T_J	Junction Temperature	150	$^\circ C$
T_{stg}	Storage Temperature	-55~150	$^\circ C$



DIM	mm	
	MIN	MAX
A	14.95	15.05
B	10.00	10.10
C	4.40	4.60
D	0.75	0.80
F	3.10	3.30
H	3.70	3.90
J	0.50	0.70
K	13.4	13.6
L	1.10	1.30
N	5.00	5.20
Q	2.70	2.90
R	2.20	2.40
S	2.65	2.85
U	6.40	6.60

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ELECTRICAL CHARACTERISTICS

T_j=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{CEO}	Collector-Emitter Voltage	I _C =1mA; R _{BE} =∞	42		58	V
V _{CBO}	Collector-Emitter Sustaining Voltage	I _C = 0.1mA; I	60			V
V _{CE(sat)-1}	Collector-Emitter Saturation Voltage	I _C = 4A; I _B = 0.2A			0.3	V
V _{CE(sat)-2}	Collector-Emitter Saturation Voltage	I _C = 6A; I _B = 0.3A			0.5	V
V _{BE(sat)-1}	Base-Emitter Saturation Voltage	I _C = 4A; I _B = 0.2A			1.2	V
V _{BE(sat)-2}	Base-Emitter Saturation Voltage	I _C = 6A; I _B = 0.3A			1.5	V
I _{CBO}	Collector Cutoff Current	V _{CB} = 60V; I _E = 0			10	μ A
I _{CER}	Collector Cutoff Current	V _{CE} = 60V; R _{BE} = 50 Ω, T _a =125°C			1.0	mA
I _{CEx}	Collector Cutoff Current	V _{CE} = 60V; V _{BE(off)} = -1.5V V _{CE} = 60V; V _{BE(off)} = -1.5V, T _a =125°C			10 1.0	μ A mA
I _{EBO}	Emitter Cutoff Current	V _{EB} = 5V; I _C = 0			10	μ A
h _{FE-1}	DC Current Gain	I _C = 0.7A; V _{CE} = 2V	100			
h _{FE-2}	DC Current Gain	I _C = 1.5A; V _{CE} = 2V	100		400	
h _{FE-3}	DC Current Gain	I _C = 4.0A; V _{CE} = 2V	60			
C _{OB}	Output Capacitance	I _E = 0; V _{CB} = 10V; f= 1.0MHz		100		pF
f _T	Current-Gain—Bandwidth Product	I _C = 1A; V _{CE} = 10V		150		MHz

Switching times

t _{on}	Turn-on Time	I _C = 4.0A, R _L = 12.5 Ω, I _{B1} = -I _{B2} = 0.2A, V _{CC} ≈ 50V			0.3	μ s
t _{stg}	Storage Time				1.5	μ s
t _f	Fall Time				0.3	μ s

◆ h_{FE-2} Classifications

M	L	K
100-200	150-300	200-400