

INCHANGE Semiconductor

isc Product Specification

isc Silicon NPN Power Transistor

BU306F/307F

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 300V(\text{Min})$ - BU306F
400V(Min)- BU307F
- Collector Current-8A

APPLICATIONS

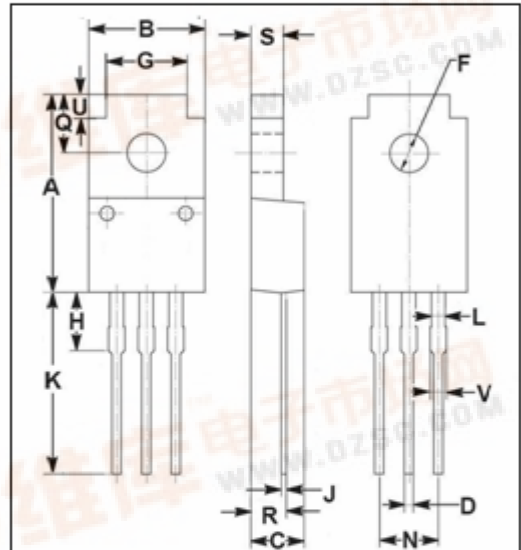
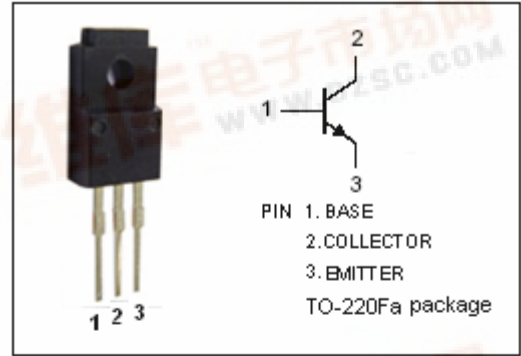
- Designed for use in switching regulators, inverters, motor controls, solenoid/relay drivers and deflection circuits.

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

SYMBOL	PARAMETER	VALUE	UNIT	
V_{CBO}	Collector-Base Voltage	BU306F	600	V
		BU307F	700	
V_{CEO}	Collector-Emitter Voltage	BU306F	300	V
		BU307F	400	
V_{EBO}	Emitter-Base Voltage	9	V	
I_C	Collector Current-Continuous	8	A	
I_{CM}	Collector Current-Peak	16	A	
I_B	Base Current	4	A	
I_{BM}	Base Current-Peak	8	A	
P_C	Collector Power Dissipation @ $T_C=25^\circ\text{C}$	20	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	6.12	$^\circ\text{C/W}$



DIM	mm	
	MIN	MAX
A	16.85	17.15
B	9.90	10.10
C	4.35	4.65
D	0.75	0.80
F	3.20	3.40
G	6.90	7.10
H	5.15	5.45
J	0.45	0.75
K	13.35	13.65
L	1.10	1.30
N	4.98	5.18
Q	4.85	5.15
R	2.95	3.25
S	2.70	2.90
U	1.75	2.05
V	1.30	1.50



isc Silicon NPN Power Transistor

BU306F/307F

ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER		CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	BU306F	$I_C=0.1\text{A}; I_B=0; L=25\text{mH}$	300			V
		BU307F					
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage		$I_C=2\text{A}; I_B=0.4\text{A}$			1.0	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage		$I_C=5\text{A}; I_B=1\text{A}$			1.5	V
			$I_C=5\text{A}; I_B=1\text{A}; T_J=100^{\circ}\text{C}$			2.0	
$V_{CE(sat)-3}$	Collector-Emitter Saturation Voltage		$I_C=8\text{A}; I_B=2\text{A}$			3.0	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage		$I_C=2\text{A}; I_B=0.4\text{A}$			1.2	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage		$I_C=5\text{A}; I_B=1\text{A}$			1.6	V
			$I_C=5\text{A}; I_B=1\text{A}; T_J=100^{\circ}\text{C}$			1.5	
I_{CES}	Collector Cutoff Current		$V_{CE}=V_{CESmax}; V_{BE}=-1.5\text{V}$			1	mA
			$V_{CE}=V_{CESmax}; V_{BE}=-1.5\text{V}; T_J=100^{\circ}\text{C}$			5	
I_{EBO}	Emitter Cutoff Current		$V_{EB}=9\text{V}; I_C=0$			1	mA
h_{FE-1}	DC Current Gain		$I_C=0.5\text{A}; V_{CE}=5\text{V}$	15		50	
h_{FE-2}	DC Current Gain		$I_C=2\text{A}; V_{CE}=5\text{V}$	8		40	
h_{FE-3}	DC Current Gain		$I_C=5\text{A}; V_{CE}=5\text{V}$	6		30	
C_{OB}	Output Capacitance		$I_E=0; V_{CB}=10\text{V}$		80		pF
f_T	Current-Gain—Bandwidth Product		$I_C=0.5\text{A}; V_{CE}=10\text{V}; f_{test}=1.0\text{MHz}$		4		MHz

Switching Times ; Resistive Load

t_d	Delay Time	$I_C=5\text{A}; I_{B1}=-I_{B2}=1\text{A}; V_{CC}=125\text{V}; t_p=25\mu\text{s}$			0.1	μs
t_r	Rise Time				1.0	μs
t_s	Storage Time			3.0		μs
t_f	Fall Time				0.7	μs