

INCHANGE Semiconductor

isc Product Specification

isc Silicon NPN Power Transistor

2N6833

DESCRIPTION

- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(SUS)} = 450V(\text{Min})$
- High Switching Speed

APPLICATIONS

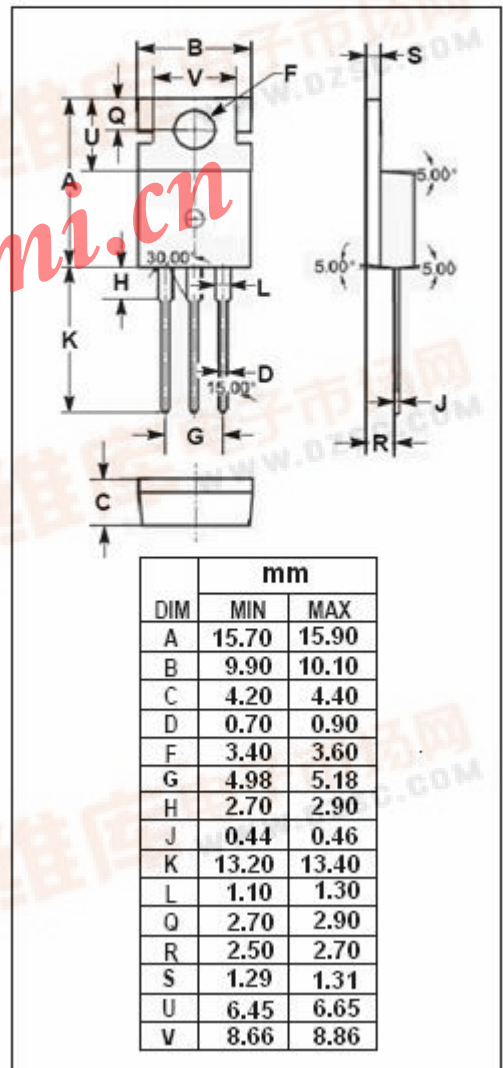
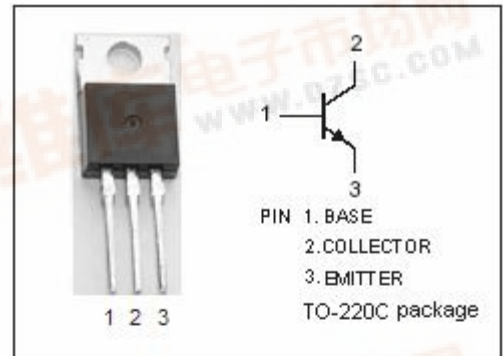
- Designed for high-voltage ,high-speed, power switching in inductive circuits where fall time is critical. They are particularly suited for line operated switch-mode applications.
- Typical applications:
- Switching regulators
- Inverters
- Solenoid and relay drivers
- Motor controls
- Deflection circuits

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CEV}$	Collector-Emitter Voltage	850	V
$V_{CEO(SUS)}$	Collector-Emitter Voltage	450	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current-Continuous	5	A
$I_{CM}$	Collector Current-Peak	10	A
$I_B$	Base Current-Continuous	4	A
$I_{BM}$	Base Current-Peak	8	A
$P_C$	Collector Power Dissipation@ $T_C=25^{\circ}C$	80	W
$T_J$	Junction Temperature	150	$^{\circ}C$
$T_{stg}$	Storage Temperature	-65~150	$^{\circ}C$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance,Junction to Case	1.56	$^{\circ}C/W$



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## ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=100\text{mA}$ ; $I_B=0$	450			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=1.5\text{A}$ ; $I_B=0.15\text{A}$			1.0	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=3\text{A}$ ; $I_B=0.4\text{A}$ $I_C=3\text{A}$ ; $I_B=0.4\text{A}$ , $T_C=100^\circ\text{C}$			2.5 2.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=3\text{A}$ ; $I_B=0.4\text{A}$ $I_C=3\text{A}$ ; $I_B=0.4\text{A}$ , $T_C=100^\circ\text{C}$			1.5 1.5	V
$I_{CEV}$	Collector Cutoff Current	$V_{CEV}=850\text{V}$ ; $V_{BE(off)}=1.5\text{V}$ $V_{CEV}=850\text{V}$ ; $V_{BE(off)}=1.5\text{V}$ ; $T_C=100^\circ\text{C}$			0.25 1.5	mA
$I_{CER}$	Collector Cutoff Current	$V_{CE}=850\text{V}$ ; $R_{BE}=50\Omega$ , $T_C=100^\circ\text{C}$			2.5	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=6.0\text{V}$ ; $I_C=0$			1.0	mA
$h_{FE-1}$	DC Current Gain	$I_C=3\text{A}$ ; $V_{CE}=5\text{V}$	7.5		30	
$h_{FE-2}$	DC Current Gain	$I_C=5\text{A}$ ; $V_{CE}=5\text{V}$	5			
$f_T$	Current Gain-Bandwidth Product	$I_C=0.25\text{A}$ ; $V_{CE}=10\text{V}$ ; $f_{test}=10\text{MHz}$	15		75	MHz
$C_{OB}$	Output Capacitance	$I_E=0$ ; $V_{CB}=10\text{V}$ ; $f_{test}=1.0\text{kHz}$	20		200	pF

Switching times; Resistive Load

$t_d$	Delay Time	$I_C=3\text{A}$ , $V_{CC}=250\text{V}$ ; $I_{B1}=0.4\text{A}$ ; $I_{B2}=-0.8\text{A}$ ; $P_W=30\mu\text{s}$ ; $R_{B2}=8\Omega$ Duty Cycle $\leq 2.0\%$		0.03	0.1	$\mu\text{s}$
$t_r$	Rise Time			0.1	0.3	$\mu\text{s}$
$t_s$	Storage Time			1.0	3.0	$\mu\text{s}$
$t_f$	Fall Time			0.06	0.3	$\mu\text{s}$