

isc Silicon NPN Darlington Power Transistor

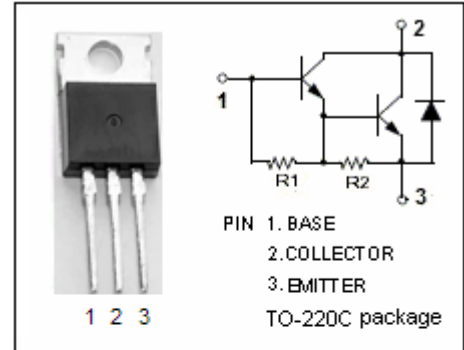
2SD1309

DESCRIPTION

- High DC Current Gain  
: $h_{FE} = 2000(\text{Min}) @ I_C = 3A$
- Collector-Emitter Sustaining Voltage-  
: $V_{CEO(\text{SUS})} = 100V (\text{Min})$
- Low Collector-Emitter Saturation Voltage-  
: $V_{CE(\text{sat})} = 1.5V (\text{Max}) @ I_C = 3A$

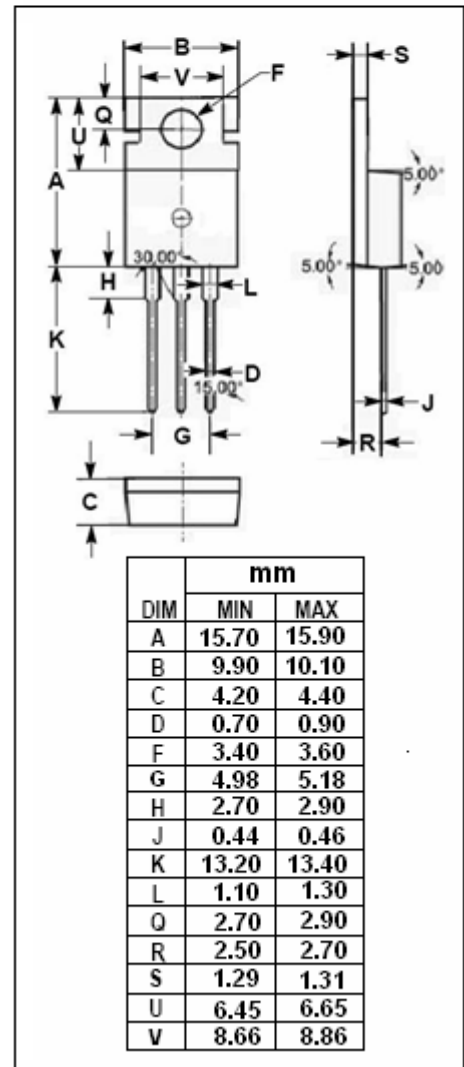
APPLICATIONS

- Designed for audio frequency amplifier and low-speed switching industrial use.



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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	150	V
$V_{CEO}$	Collector-Emitter Voltage	100	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current	8	A
$I_{CM}$	Collector Current-peak	12	A
$I_B$	Base Current	0.8	A
$P_C$	Collector Power Dissipation @ $T_C = 25^\circ\text{C}$	40	W
	Collector Power Dissipation @ $T_a = 25^\circ\text{C}$	1.5	
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-55~150	$^\circ\text{C}$



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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	$I_C=10\text{mA}; I_B=0$	100			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=3\text{A}; I_B=3\text{mA}$			1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=3\text{A}; I_B=3\text{mA}$			2.0	V
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=100\text{V}; I_E=0$			1.0	$\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=5\text{V}; I_C=0$			5	mA
$h_{FE-1}$	DC Current Gain	$I_C=3\text{A}; V_{CE}=2\text{V}$	2000		15000	
$h_{FE-2}$	DC Current Gain	$I_C=5\text{A}; V_{CE}=2\text{V}$	500			

$t_{on}$	Turn-on Time	$I_C=3\text{A}, R_L=16.7\Omega,$ $I_{B1}=-I_{B2}=3\text{mA}, V_{CC}\approx 50\text{V}$		1.0		$\mu\text{s}$
$t_{stg}$	Storage Time			3.5		$\mu\text{s}$
$t_f$	Fall Time			1.2		$\mu\text{s}$

◆  $h_{FE-1}$  Classifications

M	L	K
2000-5000	3000-7000	5000-15000