

isc Silicon NPN Darlington Power Transistor

2SD523

DESCRIPTION

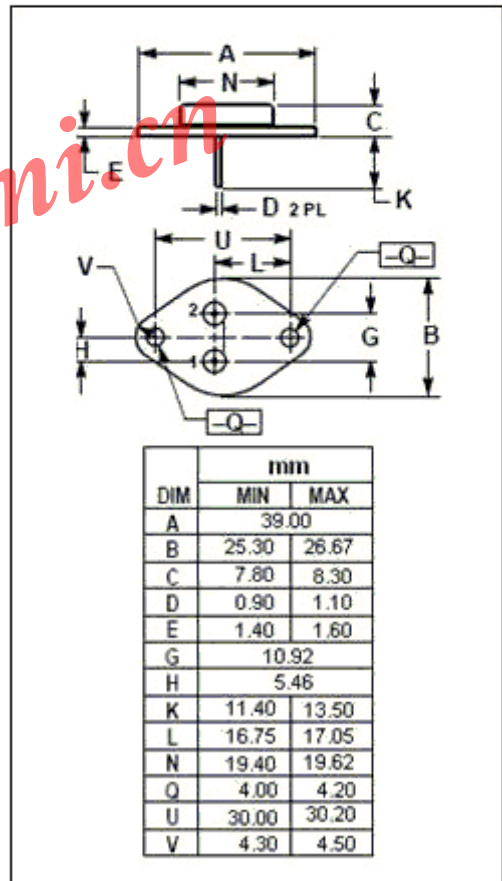
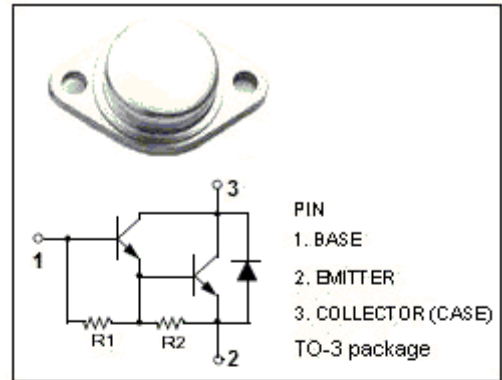
- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 80V(\text{Min.})$
- High DC Current Gain-  
:  $h_{FE} = 1000(\text{Min.}) @ I_C = 3A$
- Low Collector Saturation Voltage-  
:  $V_{CE(sat)} = 1.5V(\text{Max.}) @ I_C = 3A$

APPLICATIONS

- Designed for power switching applications.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	80	V
$V_{CEO}$	Collector-Emitter Voltage	80	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current-Continuous	7	A
$I_B$	Base Current-Continuous	0.2	A
$P_C$	Collector Power Dissipation @ $T_C = 25^\circ C$	50	W
$T_j$	Junction Temperature	150	$^\circ C$
$T_{stg}$	Storage Temperature Range	-65~+150	$^\circ C$



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## 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	$I_C=50\text{mA}; I_B=0$	80			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=3\text{A}; I_B=6\text{mA}$			1.5	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=7\text{A}; I_B=14\text{mA}$			2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=3\text{A}; I_B=6\text{mA}$			2.5	V
$I_{CBO}$	Collector Cutoff Current	$V_{CE}=80\text{V}; I_B=0$			0.1	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=5\text{V}; I_C=0$			3.0	mA
$h_{FE-1}$	DC Current Gain	$I_C=3\text{A}, V_{CE}=3\text{V}$	2000		15000	
$h_{FE-2}$	DC Current Gain	$I_C=7\text{A}, V_{CE}=3\text{V}$	1000			

## Switching Times

$t_{on}$	Turn-on Time			0.8		$\mu\text{s}$
$t_{stg}$	Storage Time	$I_C=3\text{A}, I_{B1}=-I_{B2}=6\text{mA};$ $V_{CC}=45\text{V}; R_L=15\Omega$		3.0		$\mu\text{s}$
$t_f$	Fall Time			2.5		$\mu\text{s}$