

**isc Silicon NPN Darlington Power Transistor**
**2SD1604**
**DESCRIPTION**

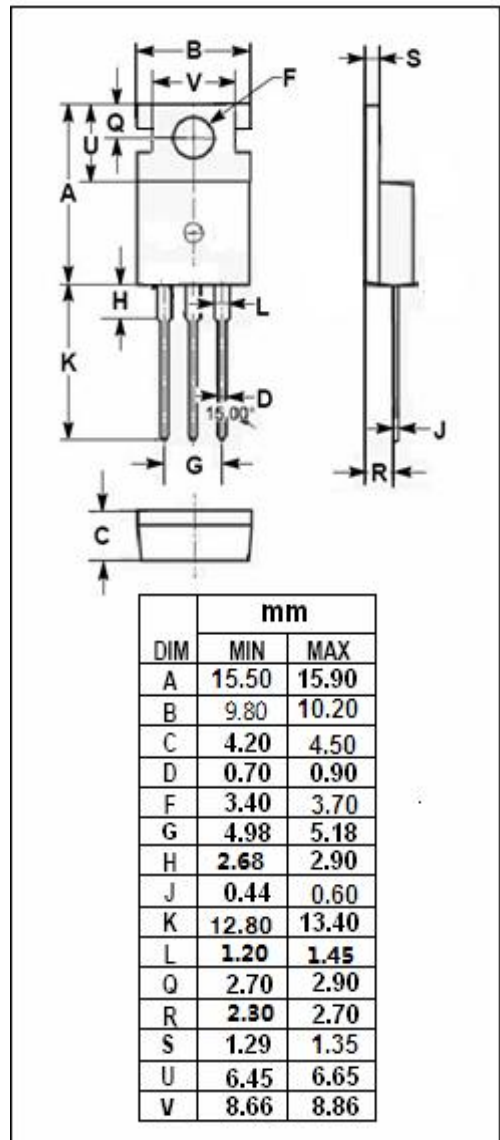
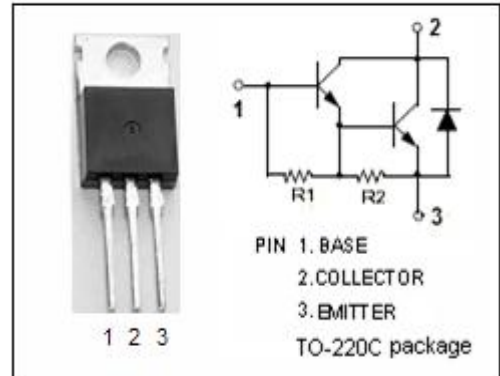
- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 80V(\text{Min})$
- High DC Current Gain  
:  $h_{FE} = 1000(\text{Min}) @ I_C = 4A$
- Complement to Type 2SB1104
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

**APPLICATIONS**

- Designed for low frequency power amplifiers applications.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	80	V
$V_{CEO}$	Collector-Emitter Voltage	80	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current-Continuous	8	A
$I_{CP}$	Collector Current-Peak	12	A
$P_C$	Collector Power Dissipation @ $T_C=25^\circ\text{C}$	40	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-55~150	$^\circ\text{C}$



## isc Silicon NPN Darlington Power Transistor

2SD1604

## 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	$I_C=25\text{mA}; R_{BE}=\infty$	80			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E=5\text{mA}; I_C=0$	7			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=4\text{A}; I_B=8\text{mA}$			1.5	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=8\text{A}; I_B=80\text{mA}$			3.0	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C=4\text{A}; I_B=8\text{mA}$			2.0	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C=8\text{A}; I_B=80\text{mA}$			3.5	V
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=60\text{V}; I_E=0$			100	$\mu\text{A}$
$I_{CEO}$	Collector Cutoff Current	$V_{CE}=50\text{V}; R_{BE}=\infty$			10	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$I_C=4\text{A}; V_{CE}=3\text{V}$	1000		20000	
$V_{ECF}$	C-E Diode Forward Voltage	$I_F=8\text{A}$			3.0	V

## Switching times

$t_{on}$	Turn-on Time	$I_C=4\text{A}, I_{B1}=I_{B2}=8\text{mA}$		0.5		$\mu\text{s}$
$t_{stg}$	Storage Time			5.0		$\mu\text{s}$
$t_f$	Fall Time			1.0		$\mu\text{s}$

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