

**isc Silicon NPN Darlington Power Transistor**
**BDW63/A/B/C/D**
**DESCRIPTION**

- Collector Current  $-I_C = 6A$
- High DC Current Gain  $-h_{FE} = 750(\text{Min.}) @ I_C = 2A$
- Complement to Type BDW64/A/B/C/D
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

**APPLICATIONS**

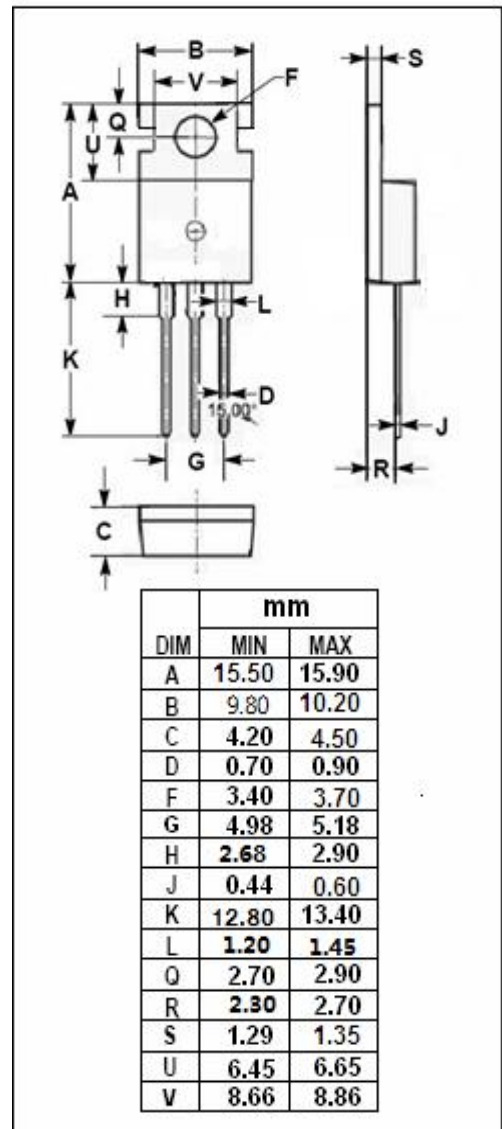
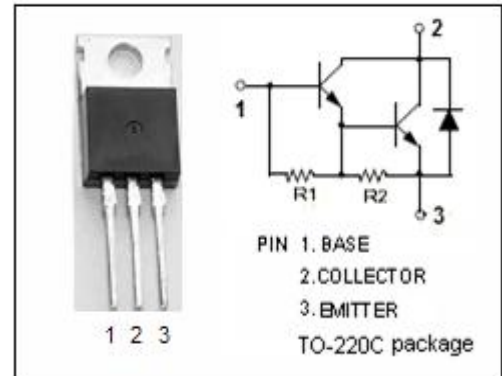
- Designed for audio output stages and general amplifier and switching applications

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

SYMBOL	PARAMETER	VALUE	UNIT	
$V_{CBO}$	Collector-Base Voltage	BDW63	45	V
		BDW63A	60	
		BDW63B	80	
		BDW63C	100	
		BDW63D	120	
$V_{CEO}$	Collector-Emitter Voltage	BDW63	45	V
		BDW63A	60	
		BDW63B	80	
		BDW63C	100	
		BDW63D	120	
$V_{EBO}$	Emitter-Base Voltage	5	V	
$I_C$	Collector Current-Continuous	6	A	
$I_B$	Base Current-Continuous	0.1	A	
$P_C$	Collector Power Dissipation @ $T_a = 25^\circ\text{C}$	2	W	
	Collector Power Dissipation @ $T_c = 25^\circ\text{C}$	60		
$T_J$	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	2.08	$^\circ\text{C}/\text{W}$
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	62.5	$^\circ\text{C}/\text{W}$



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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	BDW63	45			V
		BDW63A	60			
		BDW63B	80			
		BDW63C	100			
		BDW63D	120			
$V_{CE(sat)-1}$	Collector-Emitter Voltage	Saturation $I_C=2\text{A}; I_B=12\text{mA}$			2.5	V
$V_{CE(sat)-2}$	Collector-Emitter Voltage	Saturation $I_C=6\text{A}; I_B=60\text{mA}$			4.0	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C=2\text{A}; V_{CE}=3\text{V}$			2.5	V
$V_{ECF}$	C-E Diode Forward Voltage	$I_F=6\text{A}$			3.5	V
$I_{CEO}$	Collector Current	Cutoff				mA
		BDW63	$V_{CE}=30\text{V}; I_B=0$			
		BDW63A	$V_{CE}=30\text{V}; I_B=0$			
		BDW63B	$V_{CE}=40\text{V}; I_B=0$			
		BDW63C	$V_{CE}=50\text{V}; I_B=0$			
$I_{CBO}$	Collector Current	Cutoff				mA
		BDW63	$V_{CB}=45\text{V}; I_E=0$ $V_{CB}=45\text{V}; I_E=0; T_J=150^\circ\text{C}$		0.2 5.0	
		BDW63A	$V_{CB}=60\text{V}; I_E=0$ $V_{CB}=60\text{V}; I_E=0; T_J=150^\circ\text{C}$		0.2 5.0	
		BDW63B	$V_{CB}=80\text{V}; I_E=0$ $V_{CB}=80\text{V}; I_E=0; T_J=150^\circ\text{C}$		0.2 5.0	
		BDW63C	$V_{CB}=100\text{V}; I_E=0$ $V_{CB}=100\text{V}; I_E=0; T_J=150^\circ\text{C}$		0.2 5.0	
BDW63D	$V_{CB}=120\text{V}; I_E=0$ $V_{CB}=120\text{V}; I_E=0; T_J=150^\circ\text{C}$		0.2 5.0			
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=5\text{V}; I_C=0$			2.0	mA
$h_{FE-1}$	DC Current Gain	$I_C=2\text{A}; V_{CE}=3\text{V}$	750		20000	
$h_{FE-2}$	DC Current Gain	$I_C=6\text{A}; V_{CE}=3\text{V}$	100			

## Switching times

$t_{on}$	Turn-on Time	$I_C=3\text{A}; I_{B1}=-I_{B2}=12\text{mA};$ $V_{BE(off)}=-4.5\text{V}, R_L=10\Omega$		1.0		$\mu\text{s}$
$t_{off}$	Turn-off Time			5.0		$\mu\text{s}$

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