

**isc Silicon NPN Darlington Power Transistor**

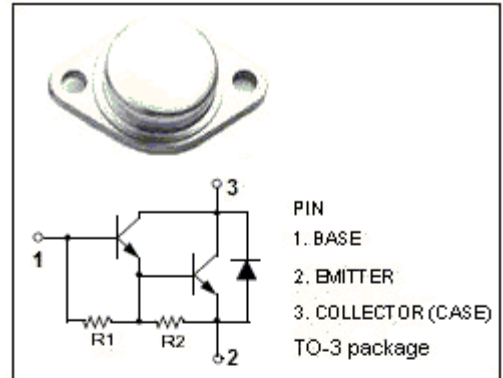
**2SD1233**

**DESCRIPTION**

- High DC Current Gain  
:  $h_{FE} = 1500(\text{Min.}) @ I_C = 4A, V_{CE} = 3V$
- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 100V(\text{Min.})$

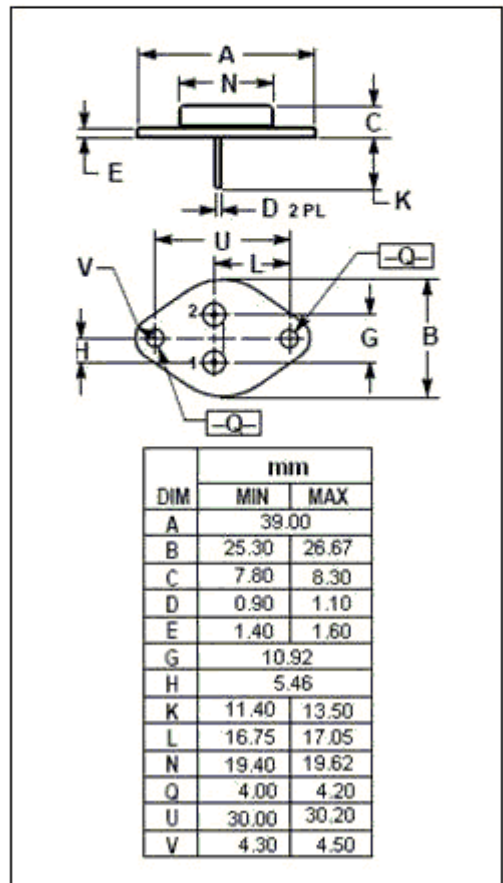
**APPLICATIONS**

- Designed for motor drivers, printer hammer drivers, relay drivers, voltage regulator control applications.



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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	110	V
$V_{CEO}$	Collector-Emitter Voltage	100	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current-Continuous	8	A
$I_{CM}$	Collector Current-Peak	12	A
$P_C$	Collector Power Dissipation @ $T_C = 25^\circ\text{C}$	70	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****2SD1233****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	$I_C=50\text{mA}; R_{BE}=\infty$	100			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C=5\text{mA}; I_E=0$	110			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=4\text{A}, I_B=8\text{mA}$			1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=4\text{A}, I_B=8\text{mA}$			2.0	V
$I_{CBO}$	Collector Cutoff current	$V_{CB}=80\text{V}, I_E=0$			0.1	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=5\text{V}; I_C=0$			3.0	mA
$f_T$	Current-Gain—Bandwidth Product	$I_C=4\text{A}; V_{CE}=5\text{V}$		20		MHz
$h_{FE}$	DC Current Gain	$I_C=4\text{A}; V_{CE}=3\text{V}$	1500			

## Switching Times

$t_{on}$	Turn-On Time	$I_C=4\text{A}, I_{B1}=-I_{B2}=8\text{mA};$ $R_L=12.5\ \Omega; V_{CC}=50\text{V}$		0.6		$\mu\text{s}$
$t_{stg}$	Storage Time			4.8		$\mu\text{s}$
$t_f$	Fall Time			1.6		$\mu\text{s}$