

**isc Silicon NPN Darlington Power Transistor**
**2SD1415A**
**DESCRIPTION**

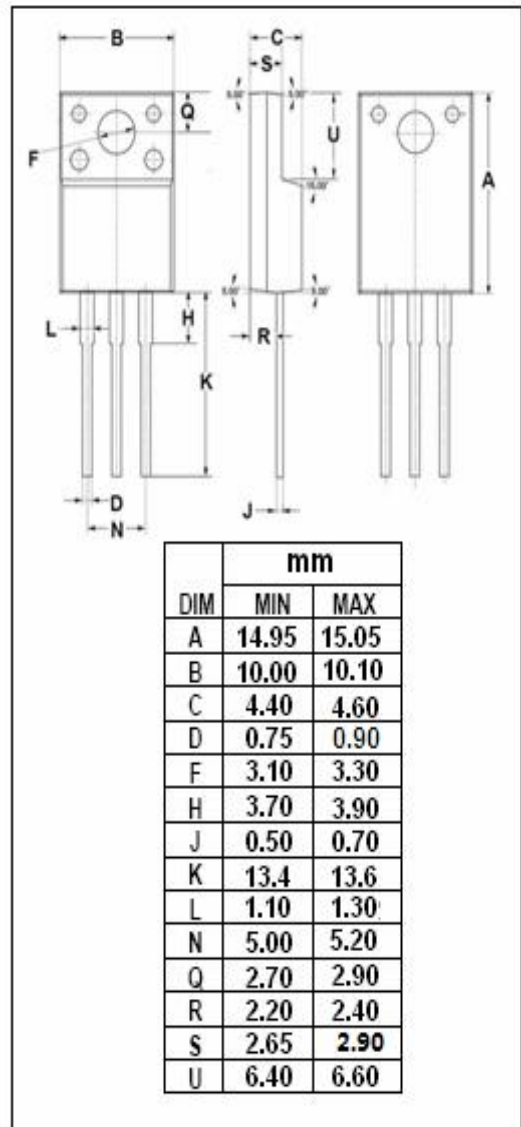
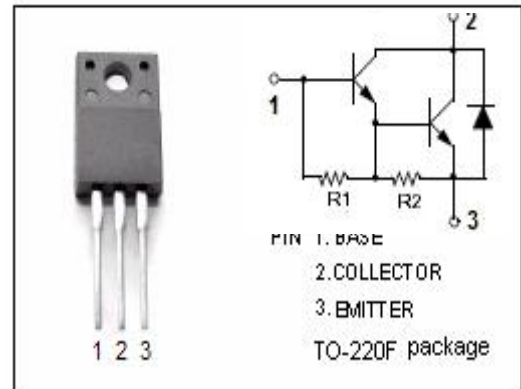
- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 100V(\text{Min})$
- Collector-Emitter Saturation Voltage-  
:  $V_{CE(sat)} = 1.5V(\text{Max}) @ I_C = 3A$
- High DC Current Gain  
:  $h_{FE} = 2000(\text{Min}) @ I_C = 3A, V_{CE} = 3V$
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

**APPLICATIONS**

- High power switching applications
- Hammer driver, pulse motor driver applications

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	120	V
$V_{CEO}$	Collector-Emitter Voltage	100	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current-Continuous	7	A
$I_{CM}$	Collector Current-Peak	10	A
$I_B$	Base Current-Continuous	0.7	A
$P_C$	Collector Power Dissipation @ $T_C=25^\circ\text{C}$	25	W
	Collector Power Dissipation @ $T_a=25^\circ\text{C}$	2.0	
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-55~150	$^\circ\text{C}$



## isc Silicon NPN Darlington Power Transistor

## 2SD1415A

## ELECTRICAL CHARACTERISTICS

T<sub>c</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 30mA ; I <sub>B</sub> = 0	100			V
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 3A; I <sub>B</sub> = 6mA			1.5	V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 3A; I <sub>B</sub> = 6mA			2.0	V
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 100V; I <sub>E</sub> = 0			100	μ A
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 6V; I <sub>C</sub> = 0	0.75		3.0	mA
h <sub>FE-1</sub>	DC Current Gain	I <sub>C</sub> = 3A ; V <sub>CE</sub> = 3V	2000		15000	
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = 6A ; V <sub>CE</sub> = 3V	1000			

## Switching times

t <sub>on</sub>	Turn-on Time	I <sub>B1</sub> = I <sub>B2</sub> = 6mA; R <sub>L</sub> = 15 Ω ; V <sub>CC</sub> ≈ 45V P <sub>W</sub> =20 μ s; Duty Cycle≤ 1%		0.3		μ s
t <sub>stg</sub>	Storage Time			5.1		μ s
t <sub>f</sub>	Fall Time			0.6		μ s

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