

isc Silicon NPN Darlington Power Transistor

2SD1416

DESCRIPTION

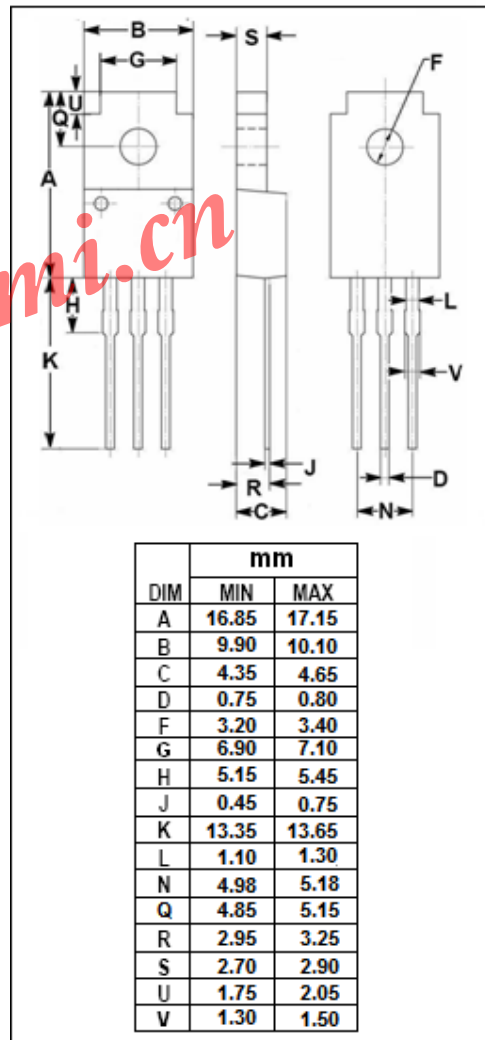
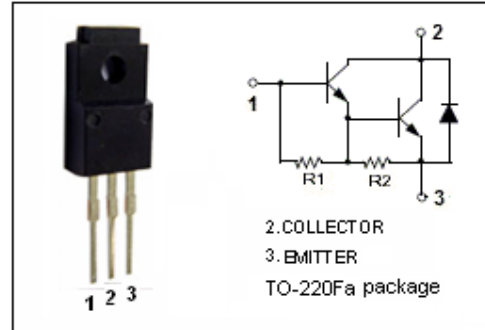
- Collector-Emitter Breakdown Voltage-
: $V_{(BR)CEO} = 80V(\text{Min})$
- Collector-Emitter Saturation Voltage-
: $V_{CE(sat)} = 1.5V(\text{Max}) @ I_C = 3A$
- High DC Current Gain
: $h_{FE} = 2000(\text{Min}) @ I_C = 3A, V_{CE} = 3V$
- Complement to Type 2SB1021

APPLICATIONS

- Hammer driver, pulse motor drive applications.
- High power switching 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	5	V
I_C	Collector Current-Continuous	7	A
I_B	Base Current-Continuous	0.2	A
P_C	Collector Power Dissipation @ $T_C = 25^\circ\text{C}$	30	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-55~150	$^\circ\text{C}$



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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	$V_{CB}=80\text{V}; I_E=0$			100	μA
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	$I_{B1}=-I_{B2}=6\text{mA}$ $R_L=15\Omega; V_{CC}=45\text{V}$ $P_W=20\mu\text{s}; \text{Duty Cycle}\leq 1\%$		0.8		μs
t_{stg}	Storage Time			3.0		μs
t_f	Fall Time			2.5		μs