

**isc Silicon PNP Power Transistor**

**2SA1441**

**DESCRIPTION**

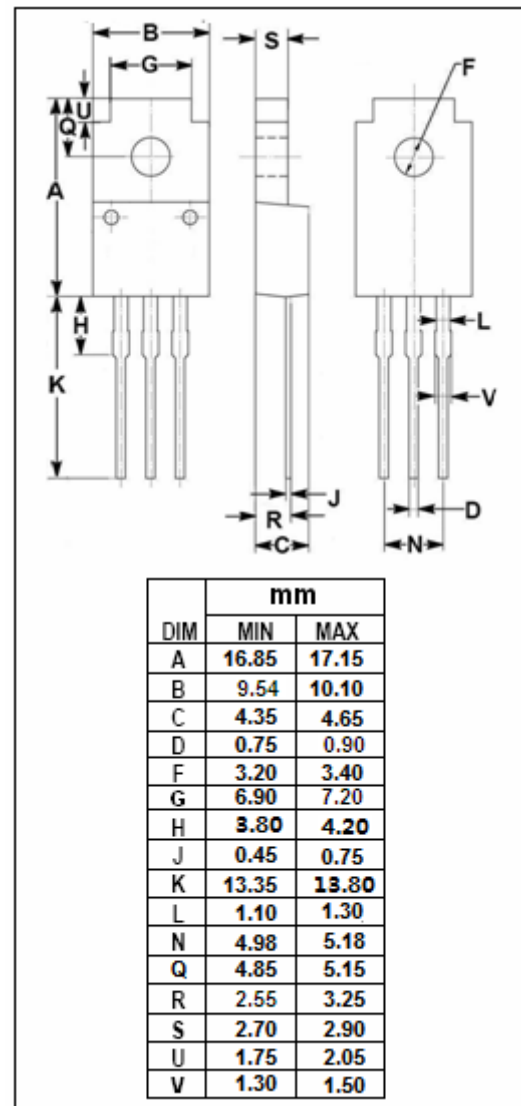
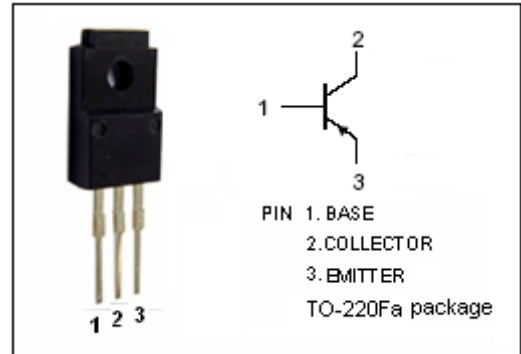
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(SUS)} = -60V(\text{Min})$
- High DC Current Gain-  
:  $h_{FE} = 100(\text{Min}) @ (V_{CE} = -2V, I_C = -1A)$
- Low Saturation Voltage-  
:  $V_{CE(sat)} = -0.3V(\text{Max}) @ (I_C = -3A, I_B = -0.15A)$

**APPLICATIONS**

- This type of power transistor is developed for high-speed switching and features a high  $h_{FE}$  at low  $V_{CE(sat)}$ , which is ideal for use as a driver in DC/DC converters and actuators.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	-100	V
$V_{CEO}$	Collector-Emitter Voltage	-60	V
$V_{EBO}$	Emitter-Base Voltage	-7.0	V
$I_C$	Collector Current-Continuous	-5.0	A
$I_{CM}$	Collector Current-Pulse	-10	A
$I_B$	Base Current-Continuous	-2.5	A
$P_T$	Total Power Dissipation @ $T_C=25^\circ\text{C}$	25	W
	Total Power Dissipation @ $T_a=25^\circ\text{C}$	2.0	
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55~150	$^\circ\text{C}$



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## ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEO(SUS)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = -3.0A ; I <sub>B</sub> = -0.3A, L= 1mH	-60			V
V <sub>CES(SUS)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = -3.0A ; I <sub>B1</sub> =-I <sub>B2</sub> = -0.3A, V <sub>BE(OFF)</sub> =1.5V, L=180μ H,clamped	-60			V
V <sub>CE(sat)-1</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = -3A; I <sub>B</sub> = -0.15A			-0.3	V
V <sub>CE(sat)-2</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = -4A; I <sub>B</sub> = -0.2A			-0.5	V
V <sub>BE(sat)-1</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = -3A; I <sub>B</sub> = -0.15A			-1.2	V
V <sub>BE(sat)-2</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = -4A; I <sub>B</sub> = -0.2A			-1.5	V
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = -60V ; I <sub>E</sub> =0			-10	μ A
I <sub>CER</sub>	Collector Cutoff Current	V <sub>CE</sub> = -60V ; R <sub>BE</sub> = 50Ω ,T <sub>a</sub> =125°C			-1.0	mA
I <sub>CES</sub>	Collector Cutoff Current	V <sub>CE</sub> = -60V; V <sub>BE(off)</sub> = -1.5V V <sub>CE</sub> = -60V; V <sub>BE(off)</sub> = -1.5V,T <sub>a</sub> =125°C			-10 -1.0	μ A mA
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = -5V; I <sub>C</sub> =0			-10	μ A
h <sub>FE-1</sub>	DC Current Gain	I <sub>C</sub> = -0.5A ; V <sub>CE</sub> = -2V	100			
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = -1.0A ; V <sub>CE</sub> = -2V	100		400	
h <sub>FE-3</sub>	DC Current Gain	I <sub>C</sub> = -3.0A ; V <sub>CE</sub> = -2V	60			
C <sub>OB</sub>	Output Capacitance	I <sub>E</sub> =0; V <sub>CB</sub> = -10V;f= 1.0MHz		130		pF
f <sub>T</sub>	Current-Gain—Bandwidth Product	I <sub>C</sub> =-0.5A ; V <sub>CE</sub> = -10V		80		MHz

## Switching times

t <sub>on</sub>	Turn-on Time	I <sub>C</sub> = -3.0A ,R <sub>L</sub> = 17Ω , I <sub>B1</sub> = -I <sub>B2</sub> = -0.15A,V <sub>CC</sub> ≈-50V			0.3	μ s
t <sub>stg</sub>	Storage Time				1.5	μ s
t <sub>f</sub>	Fall Time				0.3	μ s

◆ h<sub>FE-2</sub> Classifications

M	L	K
100-200	150-300	200-400