

isc Silicon PNP Power Transistor**2SA1744****DESCRIPTION**

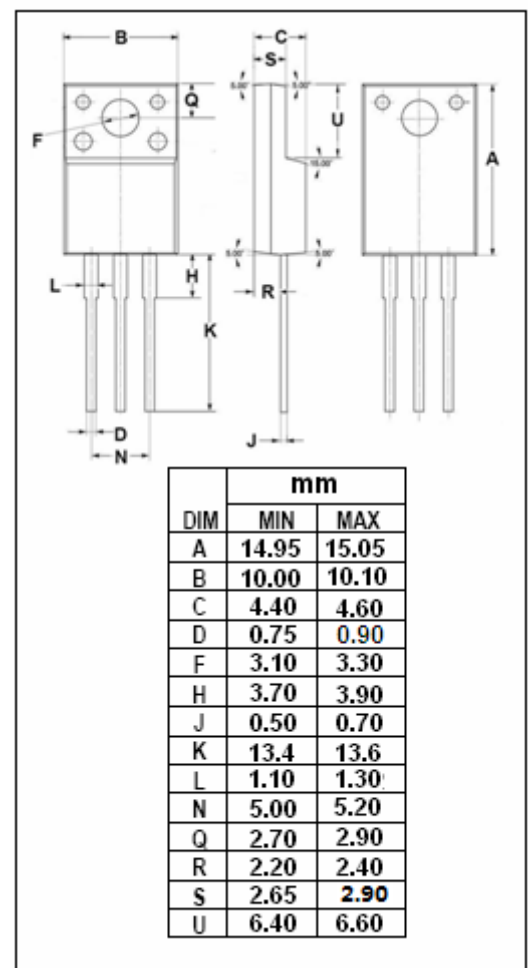
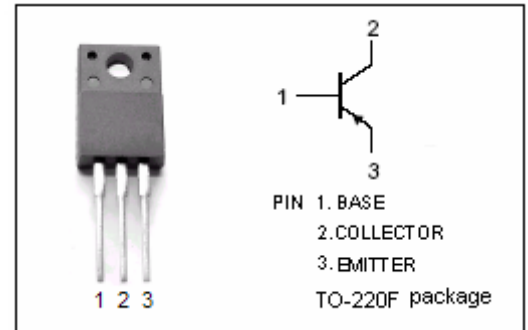
- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = -60V(\text{Min})$
- High DC Current Gain-
: $h_{FE} = 100(\text{Min})@ (V_{CE} = -2V, I_C = -3A)$
- Low Saturation Voltage-
: $V_{CE(sat)} = -0.3V(\text{Max})@ (I_C = -8A, I_B = -0.4A)$

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	-15	A
I_{CM}	Collector Current-Pulse	-30	A
I_B	Base Current-Continuous	-7.5	A
P_T	Total Power Dissipation @ $T_C = 25^\circ\text{C}$	30	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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2SA1744

ELECTRICAL CHARACTERISTICS

Tj=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C = -8.0A$; $I_B = -0.8A$, $L = 1mH$	-60			V
$V_{CEX(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C = -8.0A$; $I_{B1} = -I_{B2} = -0.8A$, $V_{BE(OFF)} = 1.5V$, $L = 180\mu H$, clamped	-60			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C = -8A$; $I_B = -0.4A$			-0.3	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C = -12A$; $I_B = -0.6A$			-0.5	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C = -8A$; $I_B = -0.4A$			-1.2	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C = -12A$; $I_B = -0.6A$			-1.5	V
I_{CBO}	Collector Cutoff Current	$V_{CB} = -60V$; $I_E = 0$			-10	μA
I_{CER}	Collector Cutoff Current	$V_{CE} = -60V$; $R_{BE} = 50\Omega$, $T_a = 125^\circ C$			-1.0	mA
I_{CEX}	Collector Cutoff Current	$V_{CE} = -60V$; $V_{BE(off)} = -1.5V$ $V_{CE} = -60V$; $V_{BE(off)} = -1.5V$, $T_a = 125^\circ C$			-10 -1.0	μA mA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = -5V$; $I_C = 0$			-10	μA
h_{FE-1}	DC Current Gain	$I_C = -1.5A$; $V_{CE} = -2V$	100			
h_{FE-2}	DC Current Gain	$I_C = -3.0A$; $V_{CE} = -2V$	100		400	
h_{FE-3}	DC Current Gain	$I_C = -8.0A$; $V_{CE} = -2V$	60			
C_{OB}	Output Capacitance	$I_E = 0$; $V_{CB} = -10V$; $f = 1.0MHz$		300		pF
f_T	Current-Gain—Bandwidth Product	$I_C = -1.5A$; $V_{CE} = -10V$		80		MHz

Switching times

t_{on}	Turn-on Time	$I_C = -8.0A$, $R_L = 6.3\Omega$, $I_{B1} = -I_{B2} = -0.4A$, $V_{CC} \approx -50V$			0.3	μs
t_{stg}	Storage Time				1.5	μs
t_f	Fall Time				0.3	μs

◆ h_{FE-2} Classifications

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