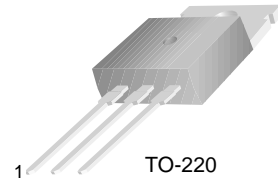**FAIRCHILD**

SEMICONDUCTOR®

KSE5740/5741/5742

High Voltage Power Switching In Inductive Circuits

• High Voltage Power Darlington TR
• Small Engine Ignition
• Switching Regulators
• Inverters
• Solenold and Relay Drivers
• Motor Control

TO-220

1

1.Base 2.Collector 3.Emitter

NPN Silicon Darlington Transistor

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Value	Units
BV_{CEO}(sus)	Collector-Emitter Sustaining Voltage : KSE5740 : KSE5741 : KSE5742	 300 350 400	 V V V
V_{CEV}	Collector-Emitter Voltage : KSE5740 : KSE5741 : KSE5742	600 700 800	V V V
V_{EBO}	Emitter-Base Voltage	8	V
I_C	Collector Current (DC)	8	A
I_{CP}	*Collector Current (Pulse)	16	A
I_B	Base Current (DC)	2.5	A
I_{BP}	*Base Current (Pulse)	5	A
P_C	Collector Dissipation	80	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 ~ 150	°C

Electrical Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage : KSE5740 : KSE5741 : KSE5742	I_C = 50mA, I_B=0	300 350 400			V V V
I_{CEV}	Collector Cut-off Current	V_{CEV}=Rate Value, $V_{BE(OFF)}$=1.5V			1	mA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 8V, I_C= 0			75	mA
h_{FE}	DC Current Gain	V_{CE} =5V, I_C = 0.5A V_{CE} =5V, I_C = 4A	50 200	100 400		
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C =4A, I_B = 0.2A I_C =8A, I_B= 0.4A			2 3	V V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C =4A, I_B = 0.2A I_C =8A, I_B = 0.4A			2.5 3.5	V V
V_F	Diode Forward Voltage	I_F =5A			2.5	V
t_D	Delay Time	V_{CC} = 250V, I_C(pk) = 6A I_{B1} = I_{B2} = 0.25A t_P = 25µs Duty Cycle≤1%		0.04		µs
t_R	Rise Time			0.5		µs
t_S	Storage Time			8		µs
t_F	Fall Time			2		µs
t_{SV}	Voltage Storage Time	I_C(pk) = 6A, V_{CE}(pk) = 250V I_B1= 0.06A, V_{BE} (off) = 5V		4		µs
t_C	Cross-over Time			2		µs

* PW=5ms, Duty Cycle=10%

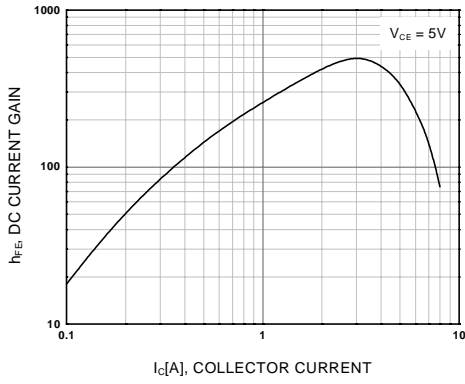# Typical Characteristics

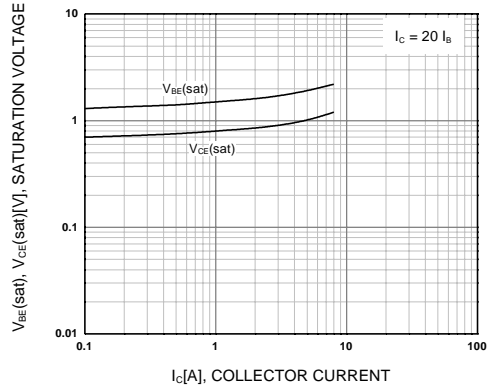Figure 1. DC current Gain

Figure 2. Base-Emitter Saturation Voltage
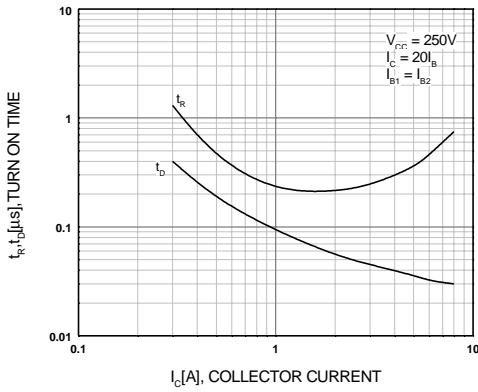Collector-Emitter Saturation Voltage

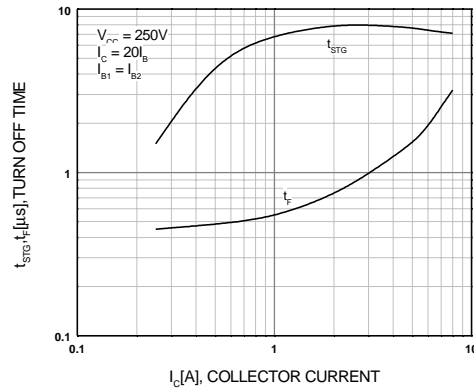Figure 3. Turn On Time
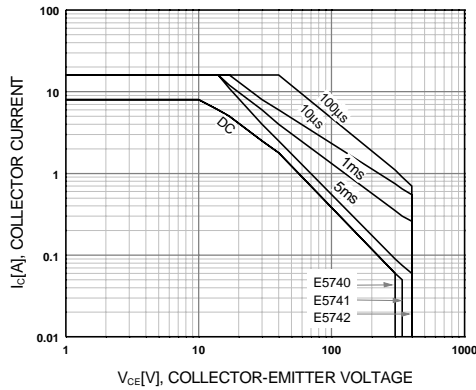

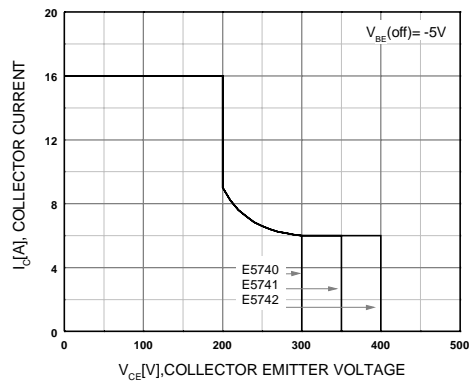Figure 4. Turn Off Time

Figure 5. Safe Operating Area

Figure 6. Reverse Bias Safe Operating Area

Typical Characteristics (Continued)
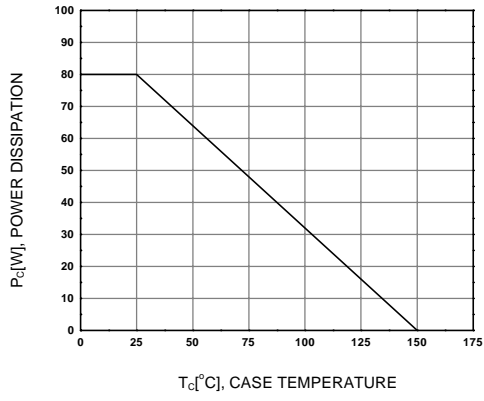
Figure 1. Power Derating

Package Demensions

TO-220

9.90 ±0.20

(8.70)

(1.70)

1.30 ±0.10

ø3.60 ±0.10

2.80 ±0.10

9.20 ±0.20

(3.70)

15.90 ±0.20

18.95MAX.

(1.46)

(3.00)

13.08 ±0.20

(1.00)

(45°)

10.08 ±0.30

1.27 ±0.10

1.52 ±0.10

0.80 ±0.10

2.54TYP
[2.54 ±0.20]

2.54TYP
[2.54 ±0.20]

10.00 ±0.20

4.50 ±0.20

1.30 $^{+0.10}_{-0.05}$

0.50 $^{+0.10}_{-0.05}$

2.40 ±0.20
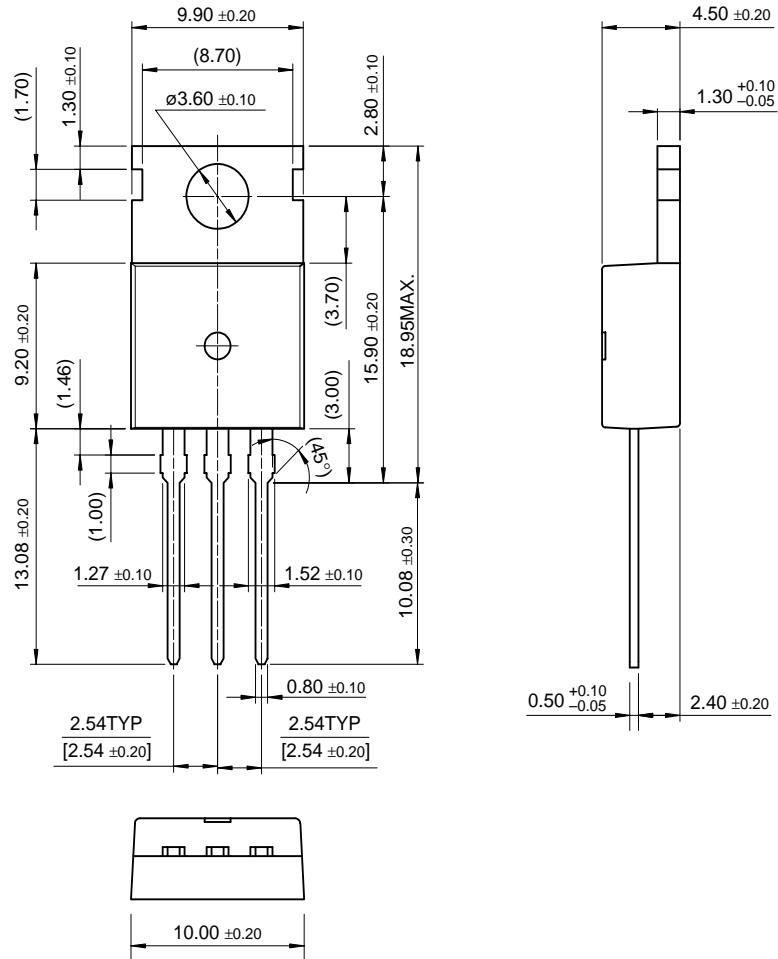
Dimensions in Millimeters

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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