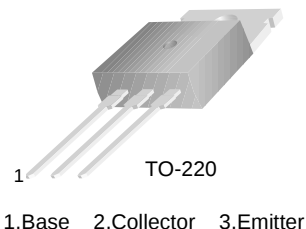


KSE5740/5741/5742

High Voltage Power Switching In Inductive Circuits

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



NPN Silicon Darlington Transistor

Absolute Maximum Ratings $T_C=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$BV_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage		
	: KSE5740	300	V
	: KSE5741	350	V
	: KSE5742	400	V
V_{CEV}	Collector-Emitter Voltage		
	: KSE5740	600	V
	: KSE5741	700	V
	: KSE5742	800	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	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 ~ 150	$^{\circ}\text{C}$

Electrical Characteristics $T_C=25^{\circ}\text{C}$ unless otherwise noted

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

* PW=5ms, Duty Cycle=10%

Typical Characteristics

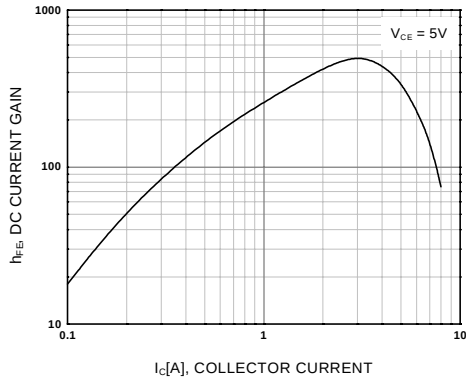


Figure 1. DC current Gain

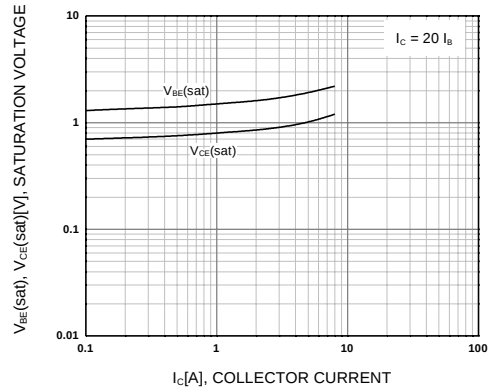


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

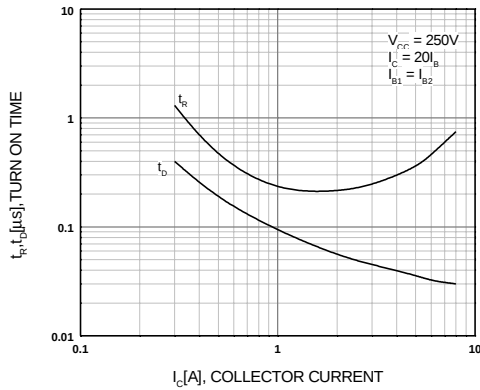


Figure 3. Turn On Time

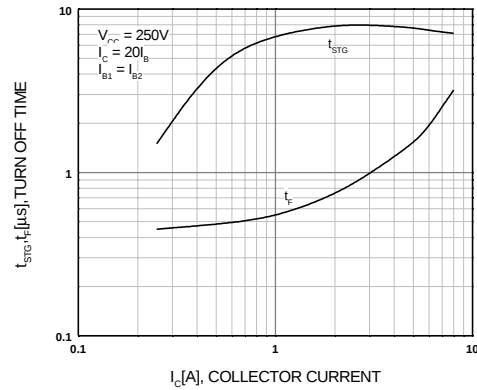


Figure 4. Turn Off Time

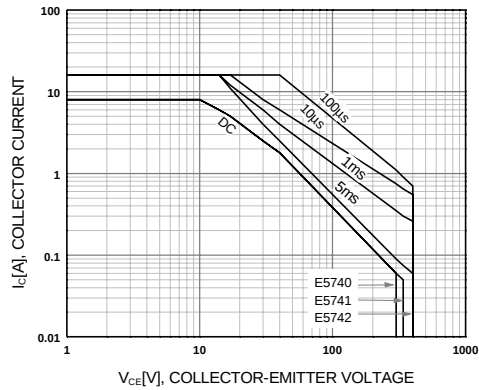


Figure 5. Safe Operating Area

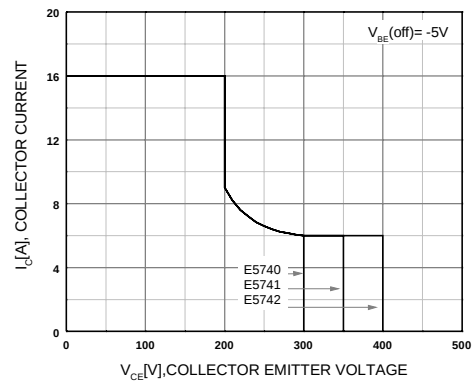


Figure 6. Reverse Bias Safe Operating Area

Typical Characteristics (Continued)

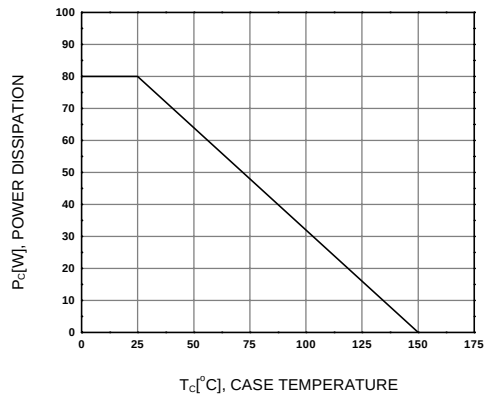
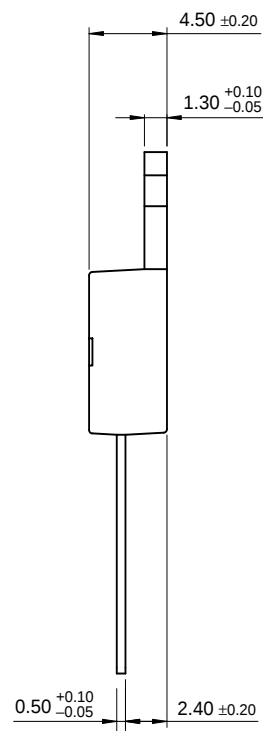


Figure 1. Power Derating

[illegible]

Rev. A1, June 2001

TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACEx™	FAST®	OPTOPLANAR™	STAR*POWER™
Bottomless™	FASTr™	PACMAN™	Stealth™
CoolFET™	FRFET™	POP™	SuperSOT™-3
CROSSVOLT™	GlobalOptoisolator™	Power247™	SuperSOT™-6
DenseTrench™	GTO™	PowerTrench®	SuperSOT™-8
DOME™	HiSeC™	QFET™	SyncFET™
EcoSPARK™	ISOPLANAR™	QS™	TruTranslation™
E ² CMOS™	LittleFET™	QT Optoelectronics™	TinyLogic™
EnSigna™	MicroFET™	Quiet Series™	UHC™
FACT™	MICROWIRE™	SLIENT SWITCHER®	UltraFET®
FACT Quiet Series™	OPTOLOGIC™	SMART START™	VCX™

STAR*POWER is used under license

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
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.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.