FAIRCHILD SEMICONDUCTOR®

August 2010

FGPF4536
360V, PDP IGBT

Features

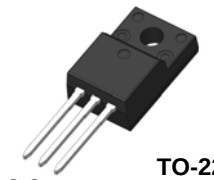
- High current capability
- Low saturation voltage: $V_{CE\ (sat)}$ =1.59 V @ I_C = 50 A
- High input impedance
- Fast switching
- RoHS compliant

Application

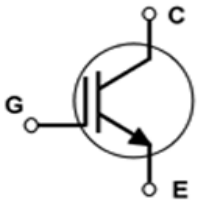
- PDP System

General Description

Using Novel Trench IGBT Technology, Fairchild's new series of trench IGBTs offer the optimum performance for PDP applications where low conduction and switching losses are essential.



TO-220F
(Retractable)



Absolute Maximum Ratings

Symbol	Description		Ratings	Units
V_{CES}	Collector to Emitter Voltage		360	V
V_{GES}	Gate to Emitter Voltage		± 30	V
$I_{C\ pulse(1)*}$	Pulsed Collector Current	@ T_C = 25°C	220	A
P_D	Maximum Power Dissipation	@ T_C = 25°C	28.4	W
	Maximum Power Dissipation	@ T_C = 100°C	11.4	W
T_J	Operating Junction Temperature		-55 to +150	°C
T_{stg}	Storage Temperature Range		-55 to +150	°C
T_L	Maximum Lead Temp. for soldering Purposes, 1/8" from case for 5 seconds		300	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$(IGBT)	Thermal Resistance, Junction to Case	-	4.4	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	-	62.5	°C/W

Notes:

(1) Half Sine Wave, D < 0.01, pluse width < 5µsec

* Ic_pluse limited by max Tj

Package Marking and Ordering Information

Device Marking	Device	Package	Packaging Type	Qty per Tube	Max Qty per Box
FGPF4536	FGPF4536TU	TO-220F	Tube	50ea	-

Electrical Characteristics of the IGBT T_C = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
BV_{CES}	Collector to Emitter Breakdown Voltage	V_{GE} = 0V, I_C = 250μA	360	-	-	V
$\frac{\Delta BV_{CES}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	V_{GE} = 0V, I_C = 250μA	-	0.4	-	V/°C
I_{CES}	Collector Cut-Off Current	V_{CE} = V_{CES}, V_{GE} = 0V	-	-	100	μA
I_{GES}	G-E Leakage Current	V_{GE} = V_{GES}, V_{CE} = 0V	-	-	±400	nA
On Characteristics						
$V_{GE(th)}$	G-E Threshold Voltage	I_C = 250μA, V_{CE} = V_{GE}	2.4	3.3	4.0	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	I_C = 20A, V_{GE} = 15V	-	1.19	-	V
		I_C = 30A, V_{GE} = 15V	-	1.33	-	V
		I_C = 50A, V_{GE} = 15V, T_C = 25°C	-	1.59	1.8	V
		I_C = 50A, V_{GE} = 15V, T_C = 125°C	-	1.66	-	V
Dynamic Characteristics						
C_{ies}	Input Capacitance	V_{CE} = 30V, V_{GE} = 0V, f = 1MHz	-	1295	-	pF
C_{oes}	Output Capacitance		-	56	-	pF
C_{res}	Reverse Transfer Capacitance		-	43	-	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{CC} = 200V, I_C = 20A, R_G = 5Ω, V_{GE} = 15V, Resistive Load, T_C=25°C	-	5	-	ns
t_r	Rise Time		-	20	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	41	-	ns
t_f	Fall Time		-	182	-	ns
$t_{d(on)}$	Turn-On Delay Time	V_{CC} = 200V, I_C = 20A, R_G = 5Ω, V_{GE} = 15V, Resistive Load, T_C = 125°C	-	4.6	-	ns
t_r	Rise Time		-	21	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	43	-	ns
t_f	Fall Time		-	249	-	ns
Q_g	Total Gate Charge	V_{CE} = 200V, I_C = 20A, V_{GE} = 15V	-	47	-	nC
Q_{ge}	Gate to Emitter Charge		-	5.4	-	nC
Q_{gc}	Gate to Collector Charge		-	15	-	nC