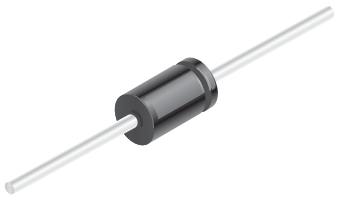
FAIRCHILD SEMICONDUCTOR®

November 2010

P6KE6V8(C)A - P6KE440(C)A
600 Watt Transient Voltage Suppressors

Features

- Glass passivated junction.
- 600W Peak Pulse Power capability at 1.0ms.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time; typically less than 1.0ps from 0 volts to BV for unidirectional and 5.0ns for bidirectional.
- Typical I_R less than 1.0μA above 10V.



DO-15

COLOR BAND DENOTES CATHODE
ON UNIDIRECTIONAL DEVICES ONLY. NO

Applications

- Devices For Bipolar Applications.
- Bidirectional types use CA suffix.
- Electrical Characteristics apply in both directions.

Absolute Maximum Ratings* T_A = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
P_{PPM}	Peak Pulse Power Dissipation at T_P=1ms	600	W
I_{PPM}	Peak Pulse Current	see table	A
P_D	Power Dissipation .375 " lead length @ T_A = 75°C	5.0	W
I_{FSM}	Non-repetitive Peak Forward Surge Current superimposed on rated load (JEDEC method) (Note 1)	100	A
T_{stg}	Storage Temperature Range	-65 to +175	°C
T_J	Operating Junction Temperature	175	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Note 1 : Measured on 8.3 ms single half-sine wave; Duty cycle = 4 pulses per minute maximum.

Electrical Characteristics T_A = 25°C unless otherwise noted

Uni-directional Bi-directional (C) Device	Reverse Stand-off Voltage V_{RWM} (V)	Breakdown Voltage V_{BR} (V)		Test Current I_T (mA)	Clamping Voltage @I_{PPM} V_C (V)	Peak Pulse Current I_{PPM} (A)	Reverse Leakage V_{RWM} I_R (μA)*	Temperature Coefficient V_{BR} (%/°C)
		Min.	Max.					
P6KE6V8(C)A	5.80	6.45	7.14	10	10.5	57.1	1000	0.057
P6KE7V5(C)A	6.40	7.13	7.88	10	11.3	53.1	500	0.061
P6KE8V2(C)A	7.02	7.79	8.61	10	12.1	50.0	200	0.065
P6KE9V1(C)A	7.78	8.65	9.55	1	13.4	45.0	50	0.068
P6KE10(C)A	8.55	9.50	10.5	1	14.5	41.0	10	0.073
P6KE11(C)A	9.40	10.5	11.6	1	15.6	38.0	5	0.075
P6KE12(C)A	10.2	11.4	12.6	1	16.7	36.0	5	0.078
P6KE13(C)A	11.1	12.4	13.7	1	18.2	33.0	5	0.081
P6KE15(C)A	12.8	14.3	15.8	1	21.2	28.0	5	0.084
P6KE16(C)A	13.6	15.2	16.8	1	22.5	27.0	5	0.086
P6KE18(C)A	15.3	17.1	18.9	1	25.2	24.0	5	0.088
P6KE20(C)A	17.1	19.0	21.0	1	27.7	22.0	5	0.090
P6KE22(C)A	18.8	20.9	23.1	1	30.6	20.0	5	0.092
P6KE24(C)A	20.5	22.8	25.2	1	33.2	18.1	5	0.094
P6KE27(C)A	23.1	25.7	28.4	1	37.5	16.0	5	0.096
P6KE30(C)A	25.6	28.5	31.5	1	41.4	14.5	5	0.097
P6KE33(C)A	28.2	31.4	34.7	1	45.7	13.2	5	0.098
P6KE36(C)A	30.8	34.2	37.8	1	49.9	12.0	5	0.099
P6KE39(C)A	33.3	37.1	41.0	1	53.9	11.2	5	0.100
P6KE43(C)A	36.8	40.9	45.2	1	59.3	10.1	5	0.101
P6KE47(C)A	40.2	44.7	49.4	1	64.8	9.3	5	0.101
P6KE51(C)A	43.6	48.5	53.6	1	70.1	8.6	5	0.102
P6KE56(C)A	47.8	53.2	58.8	1	77.0	7.8	5	0.103
P6KE62(C)A	53.0	58.9	65.1	1	85.0	7.1	5	0.104
P6KE68(C)A	58.1	64.6	71.4	1	92.0	6.5	5	0.104
P6KE75(C)A	64.1	71.3	78.8	1	103.0	5.8	5	0.105
P6KE82(C)A	70.1	77.9	86.1	1	113.0	5.3	5	0.105
P6KE91(C)A	77.8	86.5	95.5	1	125.0	4.8	5	0.106
P6KE100(C)A	85.5	95.0	105.0	1	137.0	4.4	5	0.106
P6KE110(C)A	94.0	105.0	116.0	1	152.0	4.0	5	0.107
P6KE120(C)A	102.0	114.0	126.0	1	165.0	3.6	5	0.107
P6KE130(C)A	111.0	124.0	137.0	1	179.0	3.4	5	0.107
P6KE150(C)A	128.0	143.0	158.0	1	207.0	2.9	5	0.108
P6KE160(C)A	136.0	152.0	168.0	1	219.0	2.7	5	0.108
P6KE170(C)A	145.0	162.0	179.0	1	234.0	2.6	5	0.108
P6KE180(C)A	154.0	171.0	189.0	1	246.0	2.4	5	0.108
P6KE200(C)A	171.0	190.0	210.0	1	274.0	2.2	5	0.108
P6KE220(C)A	185.0	209.0	231.0	1	328.0	1.9	5	0.108
P6KE250(C)A	214.0	237.0	263.0	1	344.0	1.8	5	0.110
P6KE300(C)A	256.0	285.0	315.0	1	414.0	1.5	5	0.110
P6KE350(C)A	300.0	332.0	368.0	1	482.0	1.3	5	0.110
P6KE400(C)A	342.0	380.0	420.0	1	548.0	1.1	5	0.110
P6KE440(C)A	376.0	418.0	462.0	1	602.0	1.0	5	0.110

* For bidirectional parts with V_{RWM}<10V, the I_R max limit is doubled.

Typical Performance Characteristics

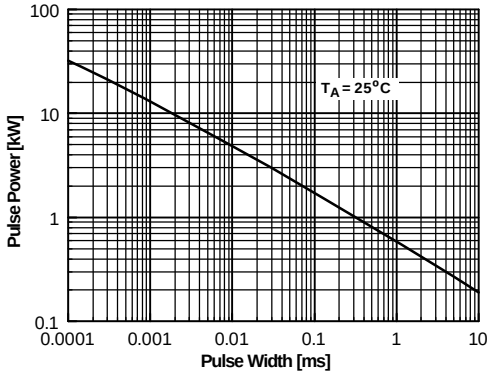


Figure 1. Peak Pulse Power Rating Curve

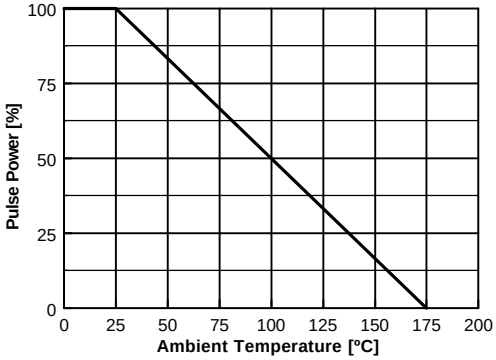


Figure 2. Pulse Derating Curve

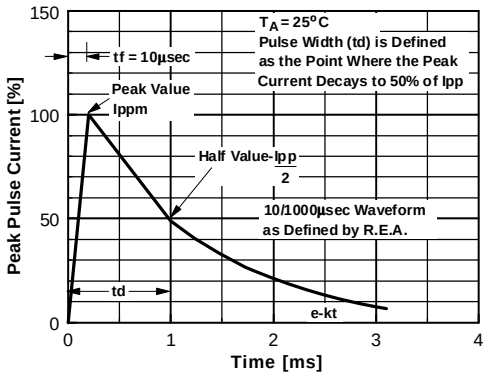


Figure 3. Pulse Waveform

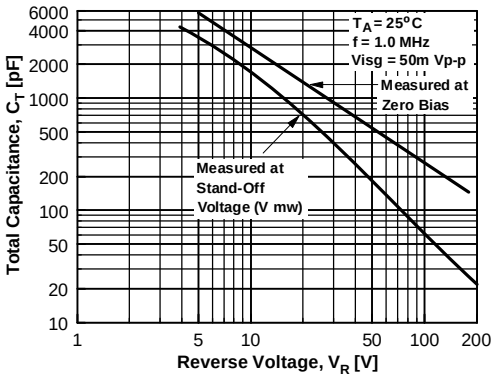


Figure 4. Total Capacitance - Unidirectional

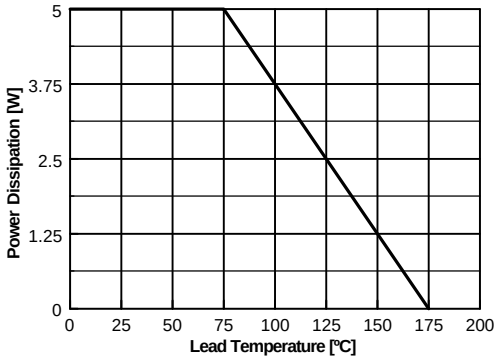


Figure 5. Steady State Power Derating Curve

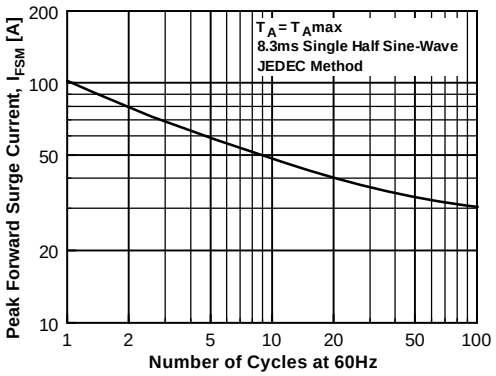


Figure 6. Non-Repetitive Surge Current

FAIRCHILD
SEMICONDUCTOR®

TRADEMARKS

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

AccuPower™
Auto-SPM™
Build it Now™
CorePLUS™
CorePOWER™
CROSSVOLT™
CTL™
Current Transfer Logic™
DEUXPEED®
Dual Cool™
EcoSPARK®
EfficientMax™
ESBC™
F®
Fairchild®
Fairchild Semiconductor®
FACT Quiet Series™
FACT®
FAST®
FastvCore™
FETBench™
FlashWriter®*
FPS™
F-PFS™
FRFET®
Global Power Resource℠
Green FPS™
Green FPS™ e-Series™
Gmax™
GTO™
IntelliMAX™
ISOPLANAR™
MegaBuck™
MICROCOUPLER™
MicroFET™
MicroPak™
MicroPak2™
MillerDrive™
MotionMax™
Motion-SPM™
OptoHiT™
OPTOLOGIC®
OPTOPLANAR®
PDP SPM™
Power-SPM™
PowerTrench®
PowerXS™
Programmable Active Droop™
QFET®
QS™
Quiet Series™
RapidConfigure™
™
Saving our world, 1mW/W/kW at a time™
SignalWise™
SmartMax™
SMART START™
SPM®
STEALTH™
SuperFET®
SuperSOT™-3
SuperSOT™-6
SuperSOT™-8
SupreMOS®
SyncFET™
Sync-Lock™
SYSTEM GENERAL®*
The Power Franchise®
the power franchise
TinyBoost™
TinyBuck™
TinyCalc™
TinyLogic®
TINYOPTO™
TinyPower™
TinyPWM™
TinyWire™
TriFault Detect™
TRUECURRENT™*
µSerDes™
SerDes
UHC®
Ultra FRFET™
UniFET™
VCX™
VisualMax™
XS™

* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

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. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

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, and (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 a significant injury of the user.
2. A critical component in 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.

ANTI-COUNTERFEITING POLICY

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, www.fairchildsemi.com, under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

PRODUCT STATUS DEFINITIONS

Definition of Terms

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

Rev. I50