![Chipsmall logo]

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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FAIRCHILD

SEMICONDUCTOR®

August 2006

FKN08PN60
TRIAC (Silicon Bidirectional Thyristor)

Application Explanation

- Switching mode power supply, light dimmer, electric flasher unit, hair drier
- TV sets, stereo, refrigerator, washing machine
- Electric blanket, solenoid driver, small motor control
- Photo copier, electric tool

TO-92

1 2 3

3

1: T_1
2: Gate
3: T_2

2

1
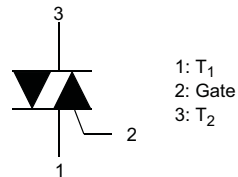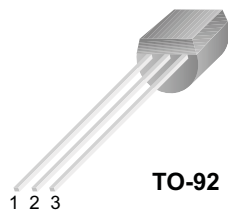
Absolute Maximum Ratings $T_a = 25°C$ unless otherwise noted

Symbol	Parameter	Value		Rating	Units
V_{DRM} V_{RRM}	Peak Repetitive Off-State Voltage	Sine Wave 50 to 60Hz, Gate Open		600	V
$I_{T (RMS)}$	RMS On-State Current	Commercial frequency, sine full wave 360° conduction, Tc= 70℃		0.8	A
I_{TSM}	Surge On-State Current	Sinewave 1 full cycle, peak value, non-repetitive	50Hz	8	A
			60Hz	9	A
I^2t	I^2t for Fusing	Value corresponding to 1 cycle of halfwave, surge on-state current, tp=8.4ms		0.33	A^2s
P_{GM}	Peak Gate Power Dissipation			5	W
$P_{G (AV)}$	Average Gate Power Dissipation			0.1	W
V_{GM}	Peak Gate Voltage			5	V
I_{GM}	Peak Gate Current			1	A
T_J	Junction Temperature			- 40 ~ 125	°C
T_{STG}	Storage Temperature			- 40 ~ 125	°C

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case [note1]	40	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient [note2]	160	°C/W

Note1: Infinite cooling condition.

Note2: JESD51-10 (Test Borad: FR4 3.0"*4.5"*0.062", Minimum land pad)

Electrical Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter		Test Condition		Min.	Typ.	Max.	Units
I_{DRM} I_{RRM}	Repetieive Peak Off-State Current		V_{DRM}/V_{RRM} applied		-	-	100	μA
V_{TM}	On-State Voltage		T_C=25°C, I_{TM}=1.12A Instantaneous measurement		-	-	1.8	V
V_{GT}	Gate Trigger Voltage	I	V_D=12V, R_L=100Ω	T2(+), Gate (+)	-	-	2.0	V
		II		T2(+), Gate (-)	-	-	2.0	V
		III		T2(-), Gate (-)	-	-	2.0	V
I_{GT}	Gate Trigger Current	I	V_D=12V, R_L=100Ω	T2(+), Gate (+)	-	-	5	mA
		II		T2(+), Gate (-)	-	-	5	mA
		III		T2(-), Gate (-)	-	-	5	mA
V_{GD}	Gate Non-Trigger Voltage		T_J=125°C, V_D=1/2V_{DRM}		0.2	-	-	V
I_H	Holding Current (I, II,III)		V_D = 12V, I_{TM} = 200mA		-	-	15	mA
I_L	Latching Current	I, III	V_D = 12V, I_G = 10mA		-	-	15	mA
		II			-	-	20	mA
dv/dt(s)	Critical Rate of Rise of Off-State Voltag		V_{DRM} = 63% Rated, T_j = 125°C, Exponential Rise		20	-	-	V/μs
dv/dt(c)	Critical-Rate of Rise of Off-State Commutating Voltage (di/dt=-0.7A/uS)				3.0	-	-	V/μs

Commutation dv/dt test

V_{DRM} (V)	Test Condition	Commutating voltage and current waveforms (inductive load)
FKN08PN60	1. Junction Temperature T_J=125°C 2. Rate of decay of on-state commutating current (di/dt)$_C$ 3. Peak off-state voltage V_D = 300V	

Quadrant Definitions for a Triac
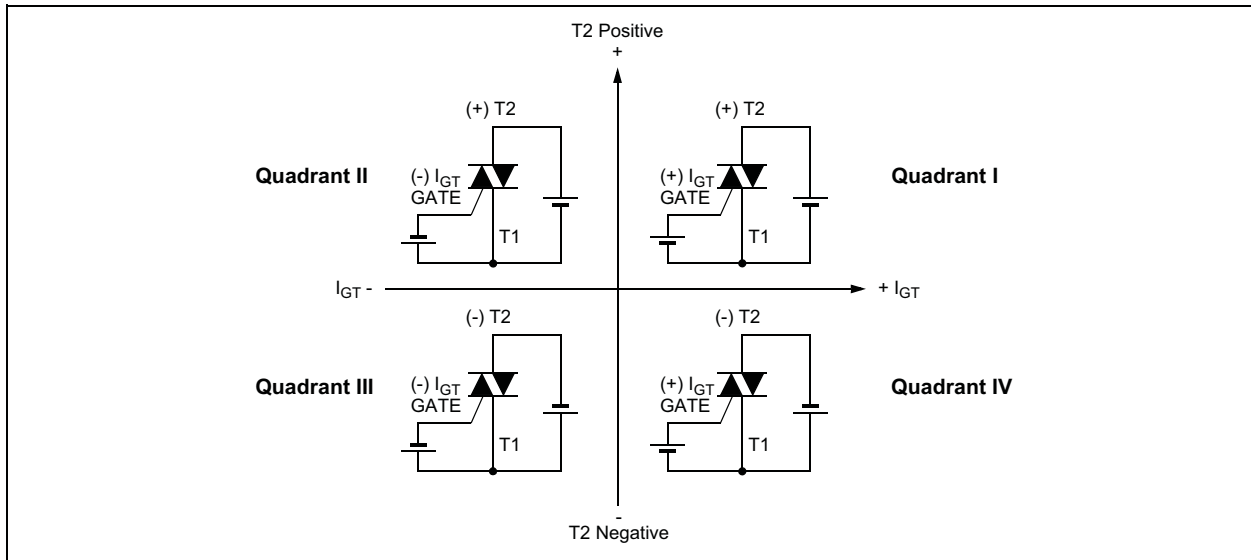
Package Marking and Ordering Information

Device Marking	Device	Package	Packing	Tape Width	Quantity
K08PN60	FKN08PN60	TO-92	Bulk	--	--

3

Typical Performance Characteristics
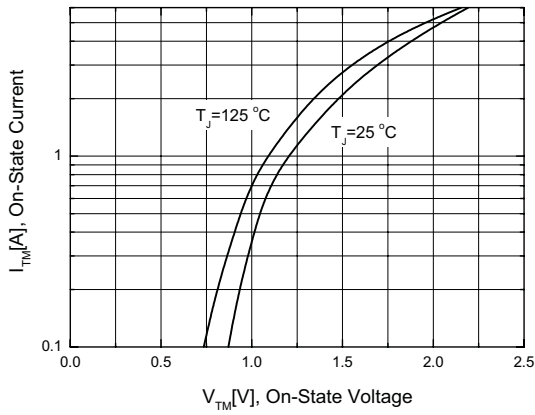
Figure 1. On-State Characteristics

Figure 2. Power Dissipation
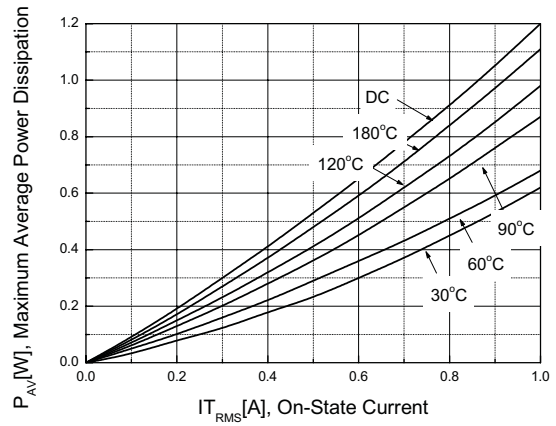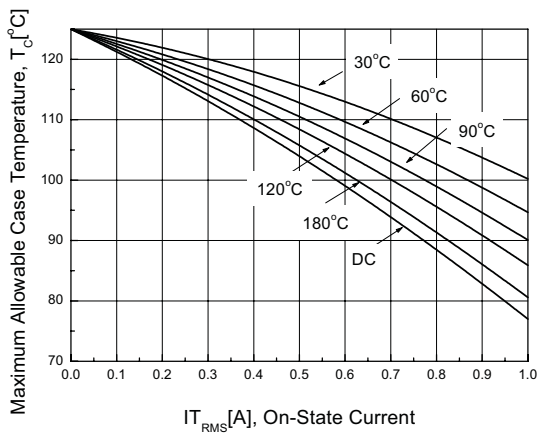

Figure 3. RMS Current Rating

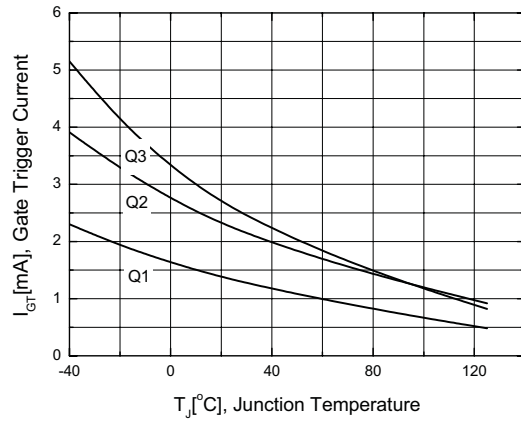### Figure 4. Typical Gate Trigger Current vs Junction Temperature

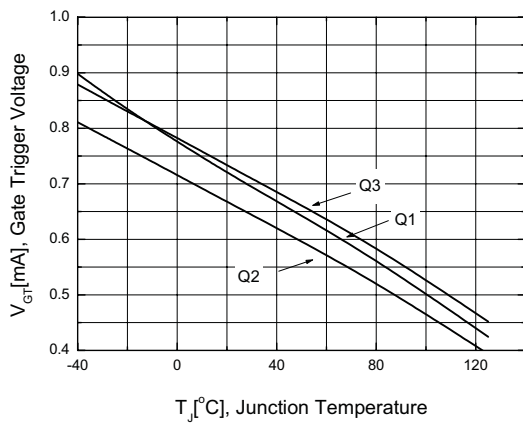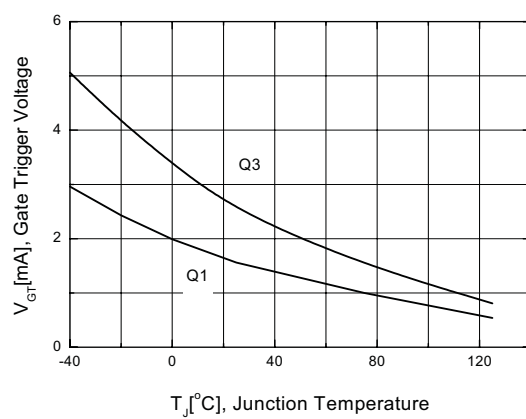### Figure5. Typical Gate Voltage vs Junction Temperarure

Figure6. Typical Latching Currrent vs Junction Temperature

Typical Performance Characteristics (Continued)

**Figure7. Typical Holding Current
vs Junction Temperature**
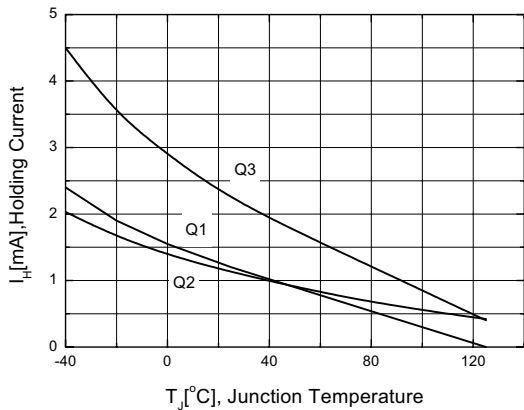
Figure8. Junction to Case Thermal Resistance

Package Dimension

TO-92

4.58 $^{+0.25}_{-0.15}$

4.58 ±0.20

0.46 ±0.10

14.47 ±0.40

1.27 TYP
[1.27 ±0.20]

1.27 TYP
[1.27 ±0.20]

0.38 $^{+0.10}_{-0.05}$

3.60 ±0.20

3.86 MAX

1.02 ±0.10

0.38 $^{+0.10}_{-0.05}$

(0.25)

(R2.29)
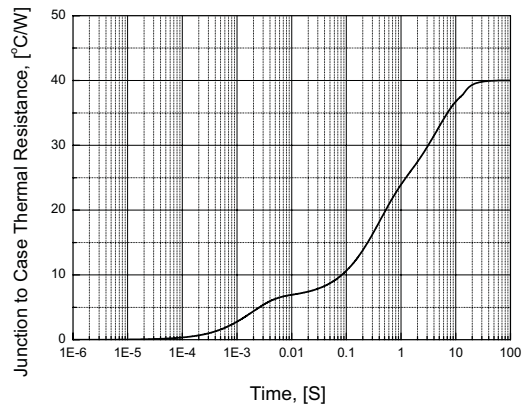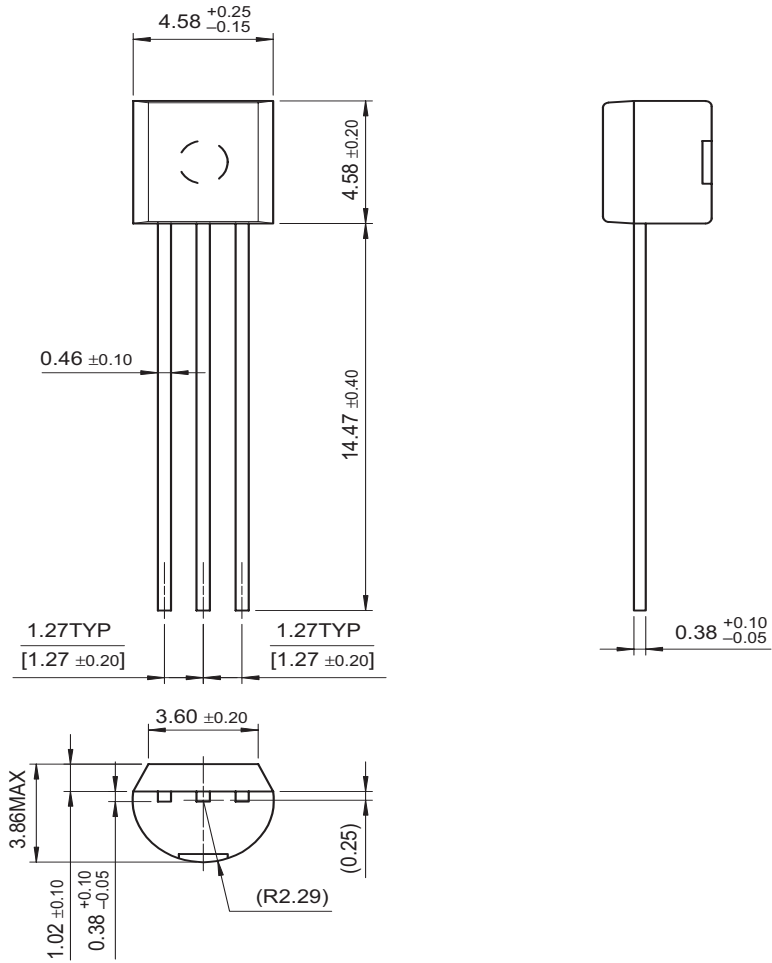
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CoolFET™	I^2C™	PACMAN™	SuperFET™	
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EnSigna™	LittleFET™	PowerTrench®	TCM™	
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FAST®	MicroFET™	QS™	TinyBuck™	
FASTr™	MicroPak™	QT Optoelectronics™	TinyPWM™	
FPS™	MICROWIRE™	Quiet Series™	TinyPower™	
FRFET™	MSX™	RapidConfigure™	TinyLogic®	
	MSXPro™	RapidConnect™	TINYOPTO™	
Across the board. Around the world.™		μSerDes™	TruTranslation™	
The Power Franchise®		ScalarPump™	UHC™	
Programmable Active Droop™				

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