

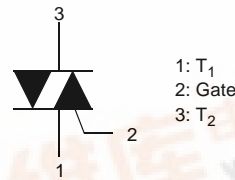
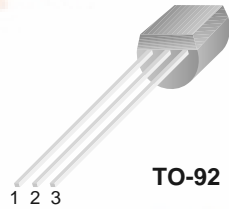


August 2006

# FKN08PN40 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



## Absolute Maximum Ratings T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Value	Rating	Units
V <sub>DRM</sub> V <sub>RRM</sub>	Peak Repetitive Off-State Voltage	Sine Wave 50 to 60Hz, Gate Open	400	V
I <sub>T (RMS)</sub>	RMS On-State Current	Commercial frequency, sine full wave 360° conduction, T <sub>c</sub> = 70 °C	0.8	A
I <sub>TSM</sub>	Surge On-State Current	Sinewave 1 full cycle, peak value, non-repetitive	50Hz 8	A
			60Hz 9	A
I <sup>2</sup> t	I <sup>2</sup> t for Fusing	Value corresponding to 1 cycle of halfwave, surge on-state current, tp=8.4ms	0.33	A <sup>2</sup> s
P <sub>GM</sub>	Peak Gate Power Dissipation		5	W
P <sub>G (AV)</sub>	Average Gate Power Dissipation		0.1	W
V <sub>GM</sub>	Peak Gate Voltage		5	V
I <sub>GM</sub>	Peak Gate Current		1	A
T <sub>J</sub>	Junction Temperature		- 40 ~ 125	°C
T <sub>STG</sub>	Storage Temperature		- 40 ~ 125	°C

## Thermal Characteristics

Symbol	Parameter	Value	Units
R <sub>θJC</sub>	Thermal Resistance, Junction to Case (note1)	40	°C/W
R <sub>θJA</sub>	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)

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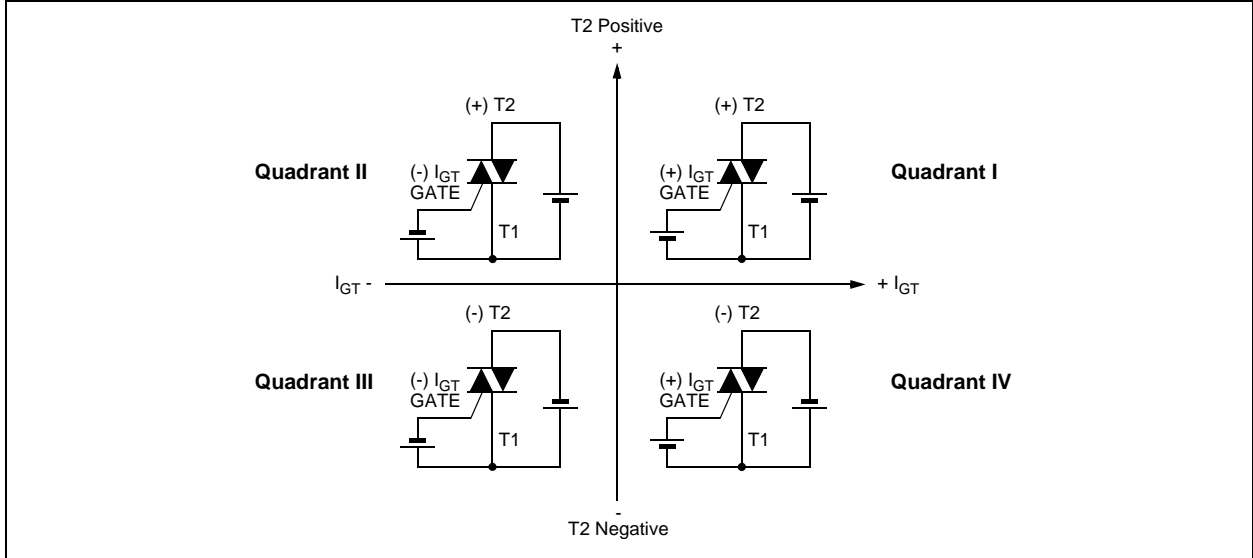
**Electrical Characteristics**  $T_C = 25^\circ\text{C}$  unless otherwise noted

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

**Commutation dv/dt Test**

$V_{DRM}$ (V)	Test Condition	Commutating voltage and current waveforms (inductive load)
FKN08PN40	1. Junction Temperature $T_J=125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_C$ 3. Peak off-state voltage $V_D = 200\text{V}$	

### Quadrant Definitions for a Triac

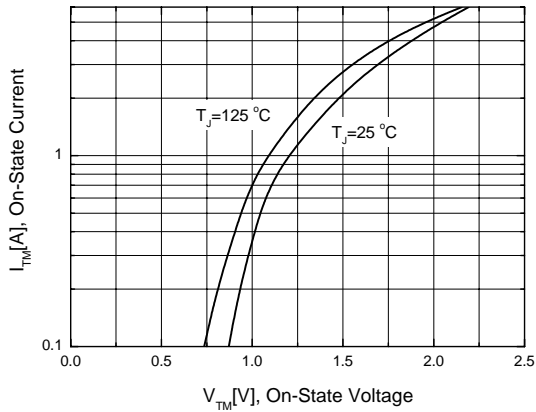


### Package Marking and Ordering Information

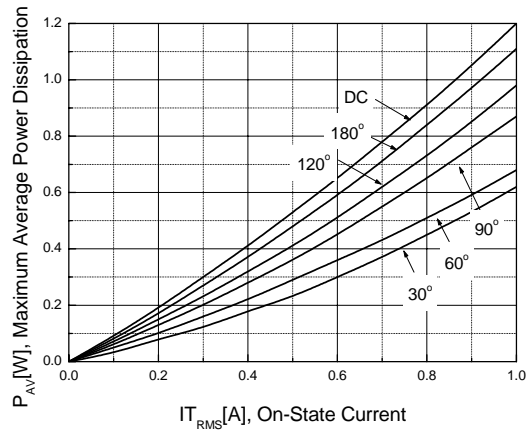
Device Marking	Device	Package	Packing	Tape Width	Quantity
K08PN40	FKN08PN40	TO-92	Bulk	--	--

## Typical Performance Characteristics

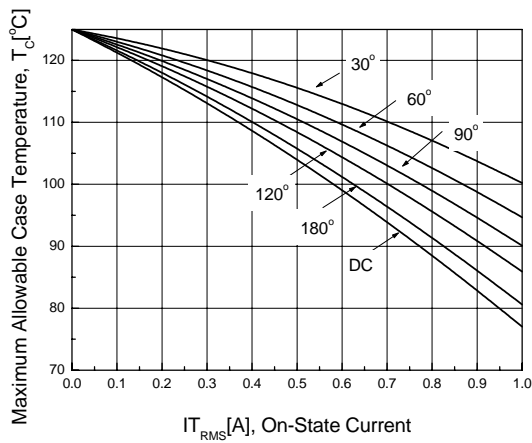
**Figure 1. On-State Characteristics**



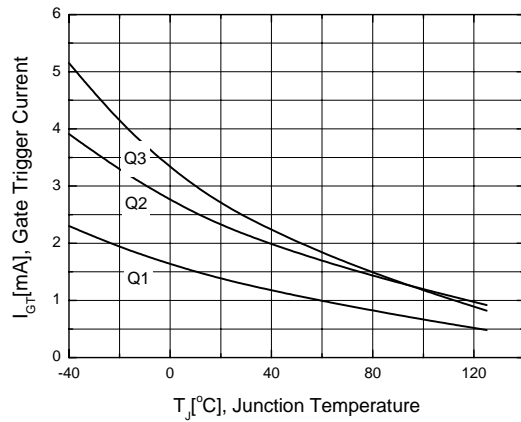
**Figure 2. Power Dissipation**



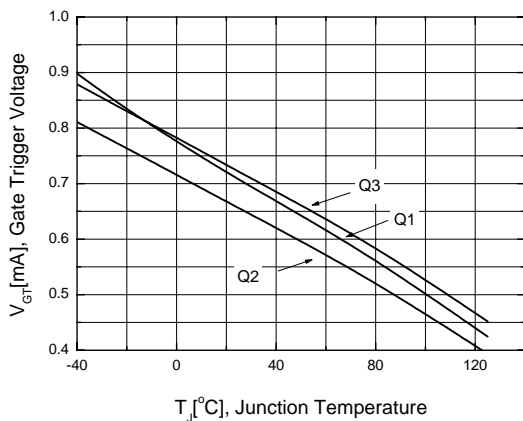
**Figure 3. RMS Current Rating**



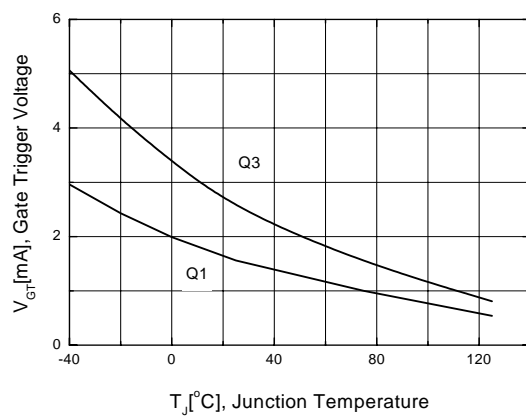
**Figure 4. Typical Gate Trigger Current vs Junction Temperature**



**Figure 5. Typical Gate Voltage vs Junction Temperature**

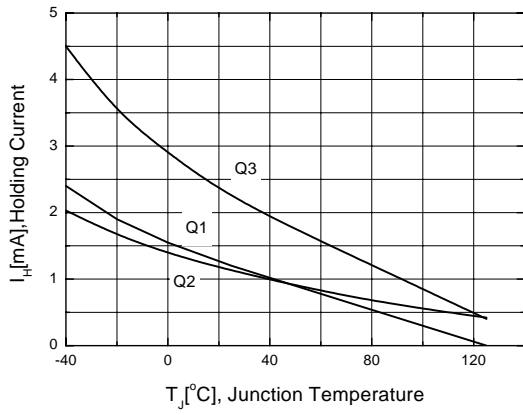


**Figure 6. Typical Latching Current vs Junction Temperature**

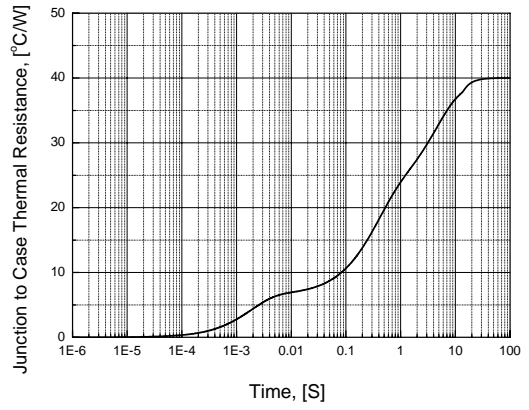


**Typical Performance Characteristics** (Continued)

**Figure7. Typical Holding Current vs Junction Temperature**

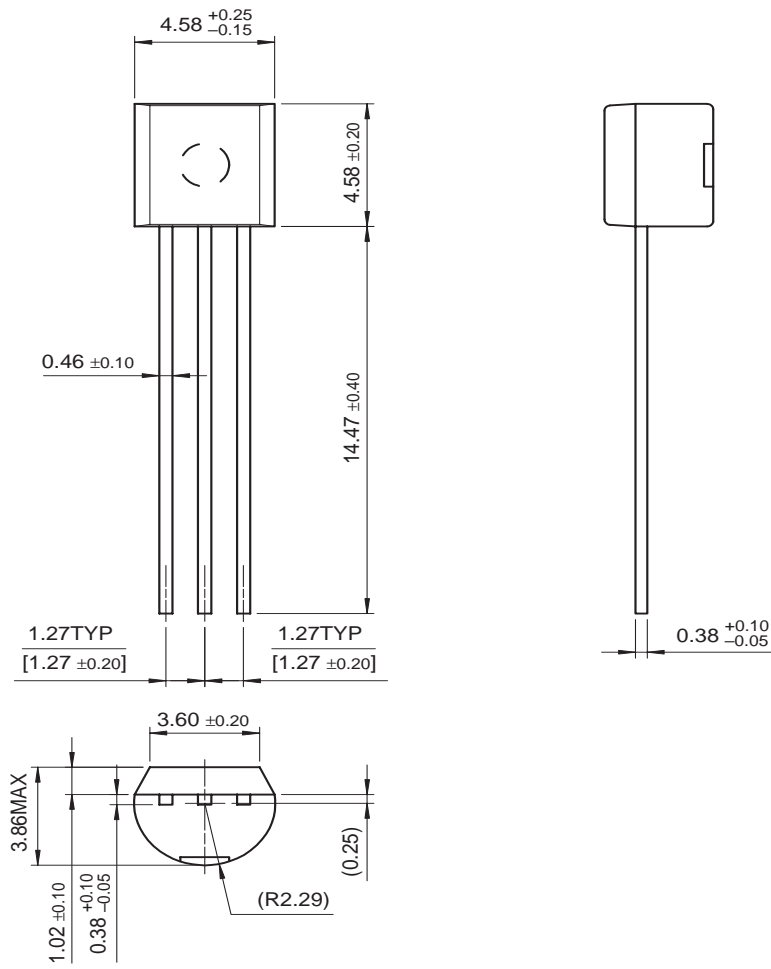


**Figure8. Junction to Case Thermal Resistance**



# Package Dimension

## TO-92



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EnSigna™	LittleFET™	PowerTrench®	TCM™	
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FASTr™	MicroPak™	QT Optoelectronics™	TinyPWM™	
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Rev. I20