



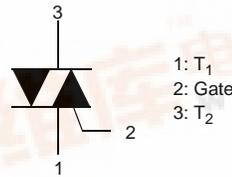
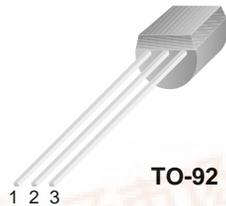
February 2008

FKN08PN40S

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_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	400	V
I _{T (RMS)}	RMS On-State Current	Commercial frequency, sine full wave 360° conduction, T _c = 70°C	0.8	A
I _{TSM}	Surge On-State Current	Sinewave half cycle, peak value, non-repetitive	60Hz 8	A
I ² t	I ² t for Fusing	Value corresponding to halfwave, surge on-state current, tp=8.33ms	0.26	A ² s
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 _{θJC}	Thermal Resistance, Junction to Case (note1)	45	°C/W
R _{θJA}	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)

FKN08PN40S — TRIAC (Silicon Bidirectional Thyristor)



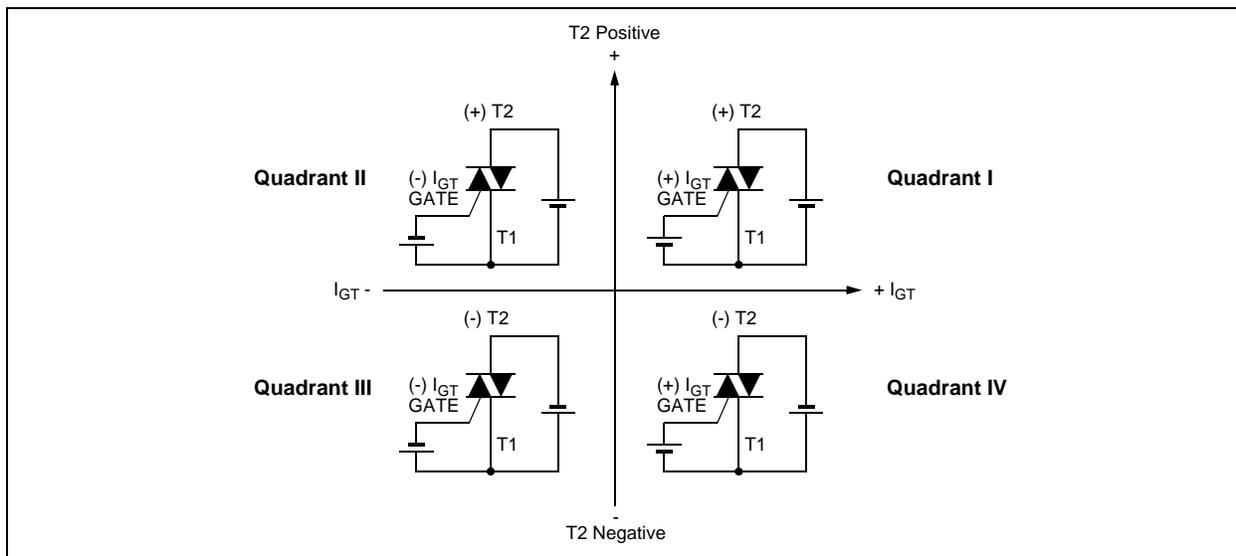
Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units	
I_{DRM} I_{RRM}	Repetitive Peak Off-State Current	V_{DRM}/V_{RRM} applied	-	-	100	μA	
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 (Note 2)	$V_D=12\text{V}$, $R_L=100\Omega$	T2(+), Gate (+)	-	-	2.0	V
			T2(+), Gate (-)	-	-	2.0	V
			T2(-), Gate (-)	-	-	2.0	V
I_{GT}	Gate Trigger Current (Note 2)	$V_D=12\text{V}$, $R_L=100\Omega$	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	-	-	V/ μs	
dv/dt(c)	Critical-Rate of Rise of Off-State Commutating Voltage (di/dt=-0.7A/ μs)		3.0	-	-	V/ μs	

Commutation dv/dt test

V_{DRM} (V)	Test Condition	Commutating voltage and current waveforms (inductive load)
FKN08PN40S	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
K08PN40S	FKN08PN40S	TO-92	BULK	--	--

Typical Performance Characteristics

Figure 1. On-State Characteristics

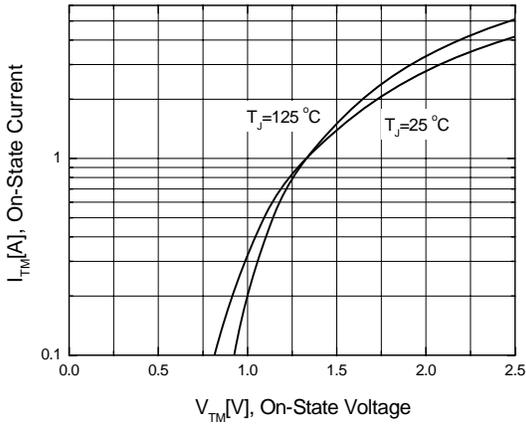


Figure 2. Power Dissipation

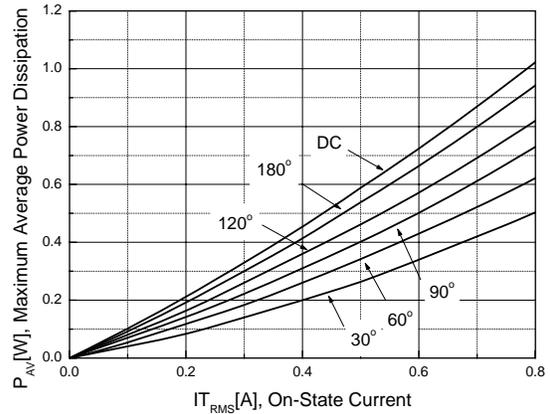


Figure 3. RMS Current Rating

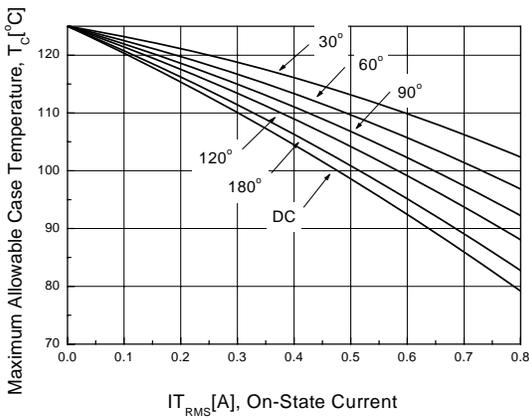


Figure 4. Typical Gate Trigger Current vs Junction Temperature

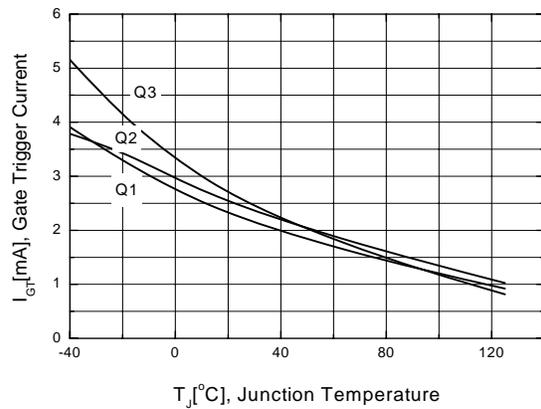


Figure 5. Typical Gate Voltage vs Junction Temperature

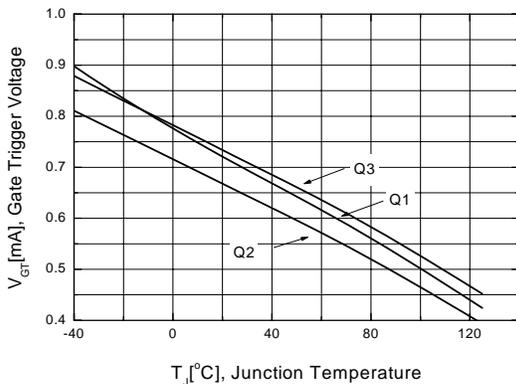
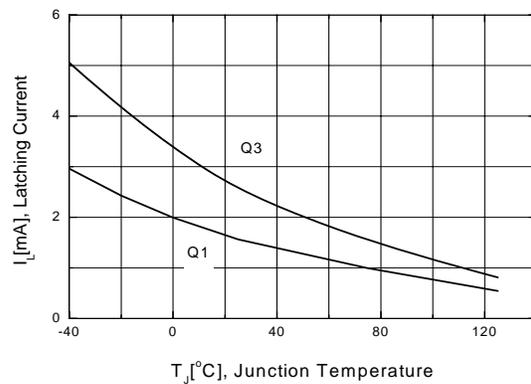


Figure 6. Typical Latching Current vs Junction Temperature



Typical Performance Characteristics (Continued)

Figure7. Typical Holding Current vs Junction Temperature

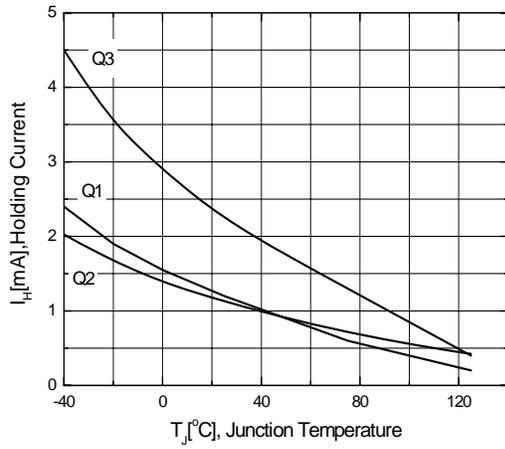
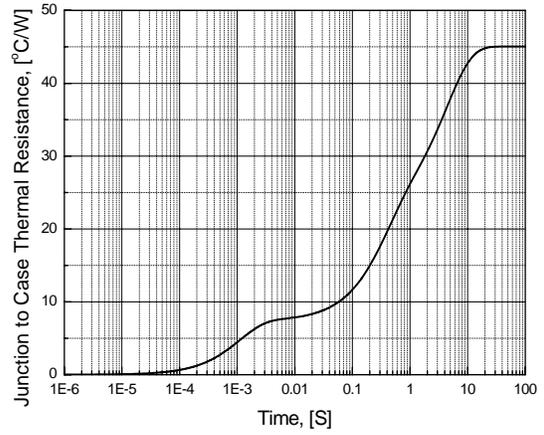
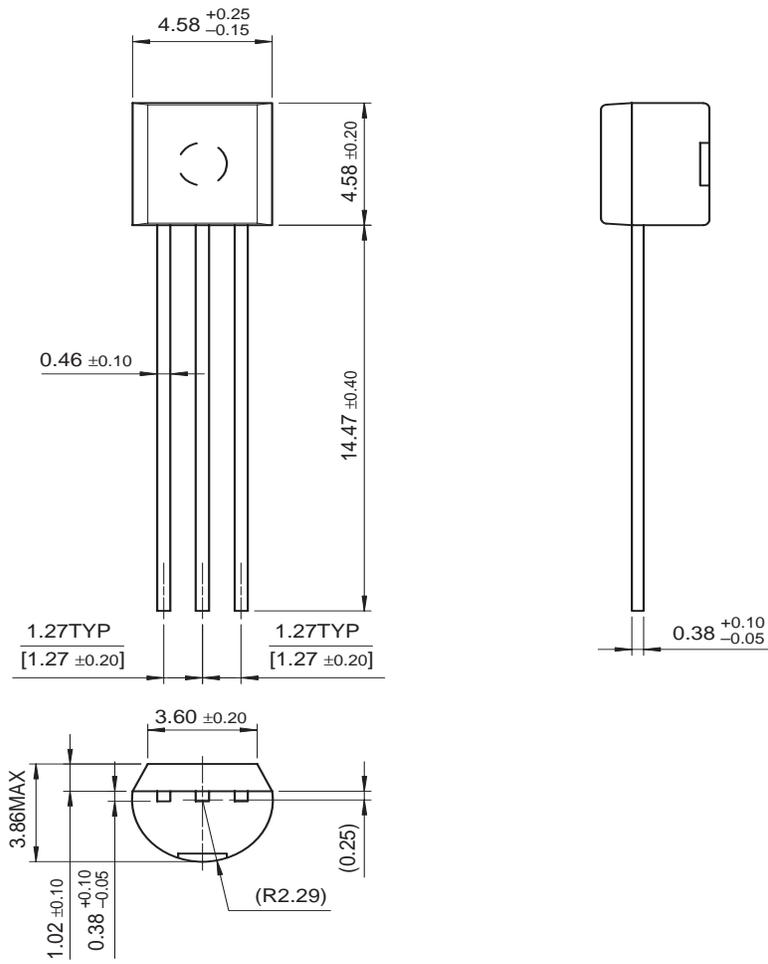


Figure8. Junction to Case Thermal Resistance



Package Dimension

TO-92





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