

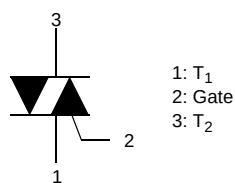
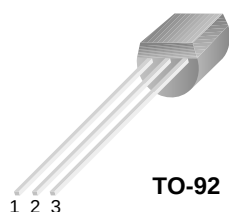


FKN1N60SA

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		600	V
I _{T (RMS)}	RMS On-State Current	Commercial frequency, sine full wave 360° conduction, Tc= 70 °C		1.0	A
I _{TSM}	Surge On-State Current	Sinewave 1 full cycle, peak value, non-repetitive	50Hz	9	A
			60Hz	10	A
I ² t	I ² t for Fusing	Value corresponding to 1 cycle of halfwave, surge on-state current, tp=8.4ms		0.41	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)	40	°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)

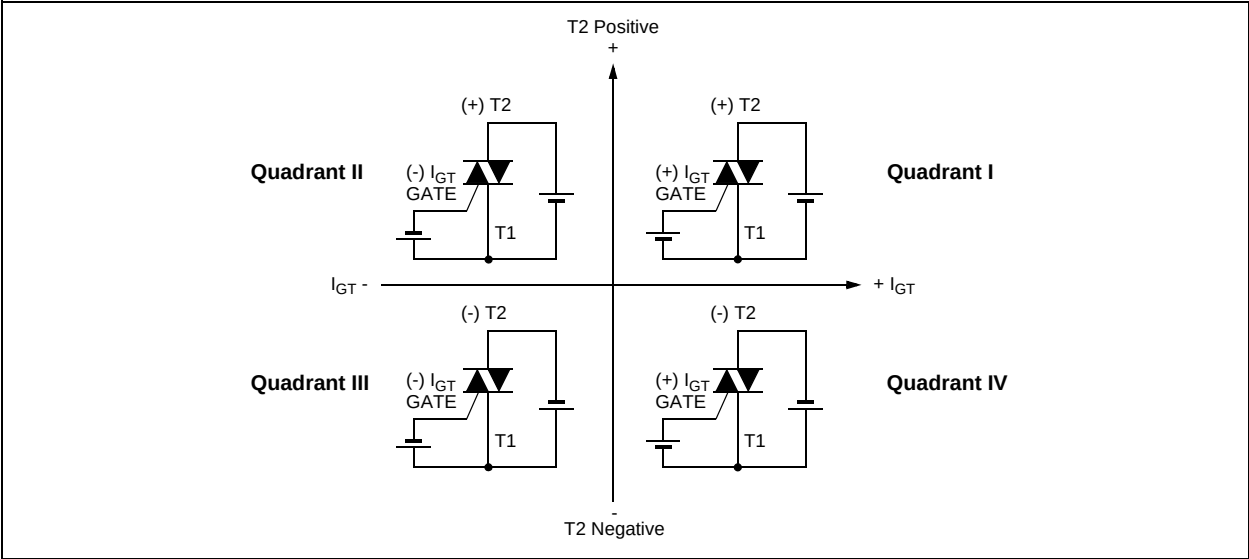
Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

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 Com- mutating Voltage (di/dt=-0.7A/uS)				3.0	-	-	V/μs

Commutation dv/dt test

Device	Test Condition	Commutating voltage and current waveforms (inductive load)
FKN1N60SA	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 $V_D = 300\text{V}$	The diagram illustrates the commutation process under an inductive load. It shows three waveforms over time: Supply Voltage (a sine wave), Main Current (a sine wave that decays to zero), and Main Voltage (a square wave that rises to a peak V_D during the current decay). Key parameters labeled are the rate of decay of on-state commutating current $(di/dt)_C$ and the critical rate of rise of off-state commutating voltage $(dv/dt)_C$.

Quadrant Definitions for a Triac



Package Marking and Ordering Information

Device Marking	Device	Package	Packing	Tape Width	Quantity
K1N60SA	FKN1N60SA	TO-92	Bulk	--	--

Typical Performance Characteristics

Figure 1. On-State Characteristics

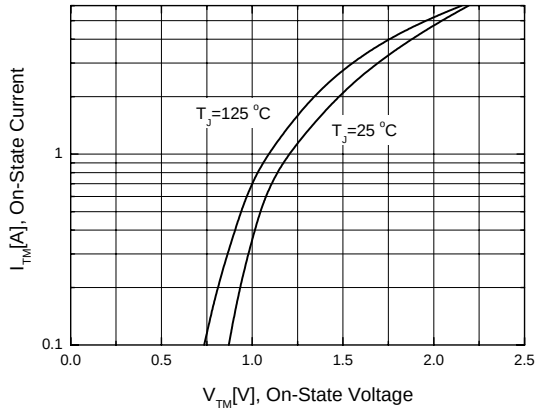


Figure 2. Power Dissipation

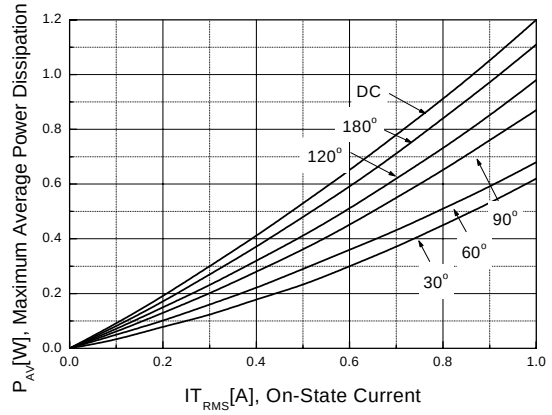


Figure 3. RMS Current Rating

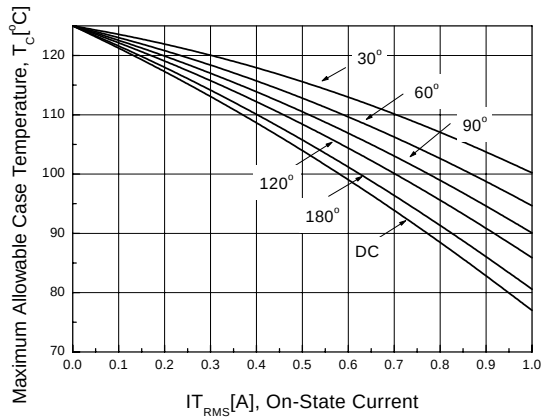


Figure 4. Typical Gate Trigger Current vs Junction Temperature

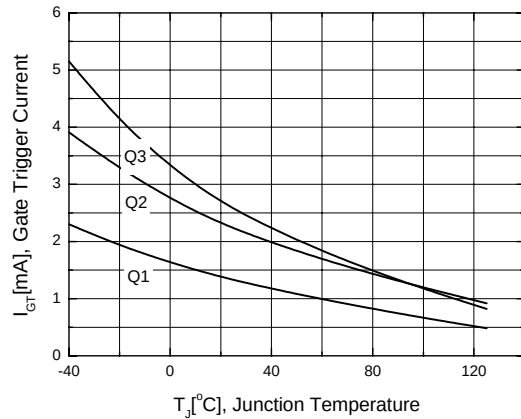


Figure 5. Typical Gate Voltage vs Junction Temperature

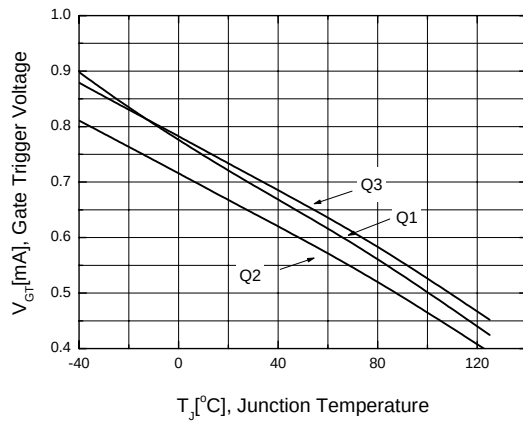
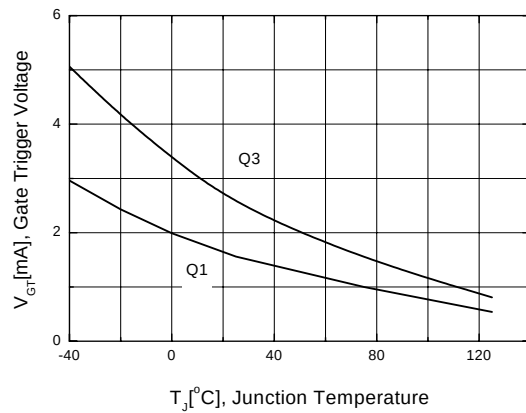


Figure 6. Typical Latching Current vs Junction Temperature



Typical Performance Characteristics (Continued)

Figure7. Typical Holding Current vs Junction Temperature

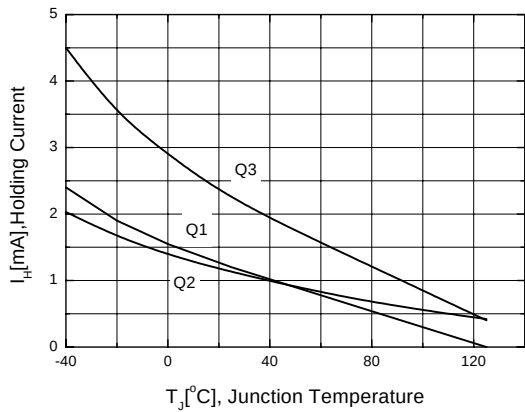
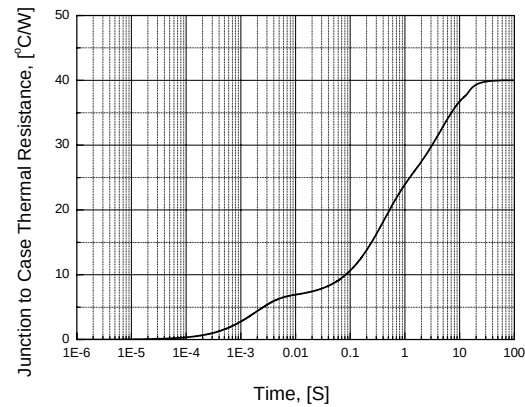
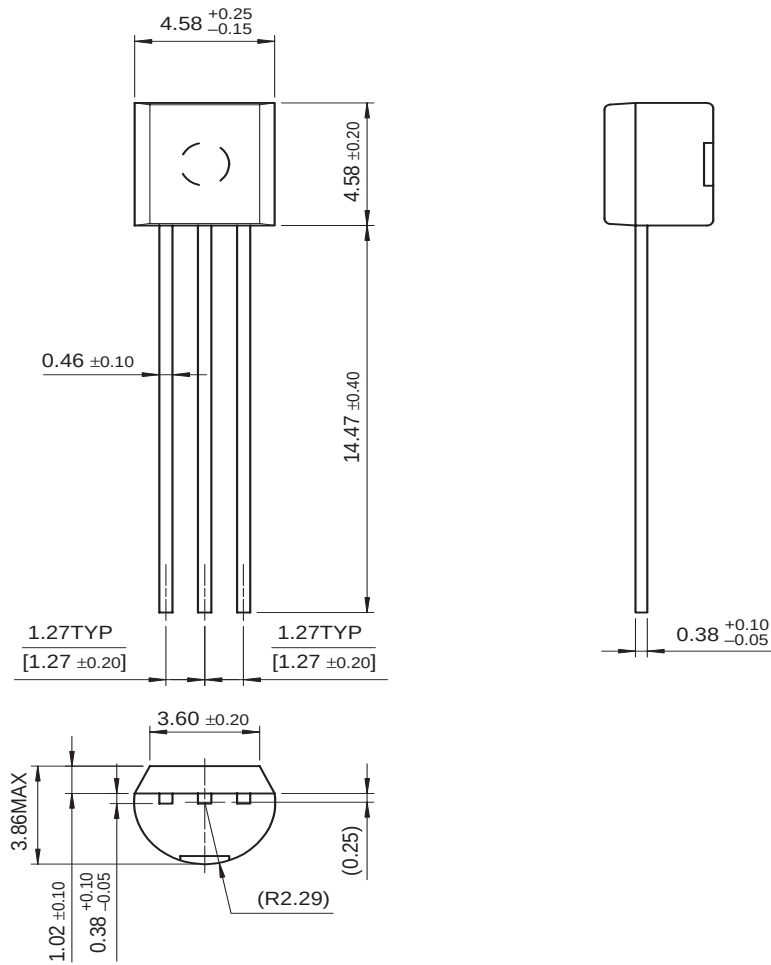


Figure8. Junction to Case Thermal Resistance



Package Dimension

TO-92



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