®

SEMICONDUCTOR

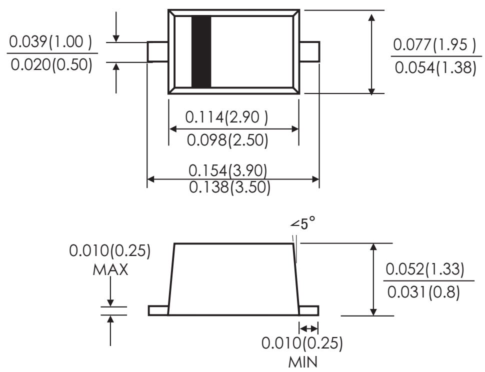
DB160K

BILATERAL VOLTAGE TRIGGERED SWITCH

FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Bilateral voltage triggered
- AC circuit oriented
- Glass-passivated junctions
- High surge current capabilities
- High voltage lamp ignitors
- Xenon ignitors
- Natural gas ignitors
- Over voltage protector
- High temperature soldering guaranteed:260°C/10 seconds at terminals
- Component in accordance to RoHS 2011/65/EU

SOD-123FL



Dimensions in inches and (millimeters)

MECHANICAL DATA

- Case: SOD-123FL molded plastic body
- Terminals: Solder Plated, solderable per MIL-STD-750,method 2026

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

(Ratings at 25°C ambient temperature unless otherwise specified ,Single phase ,half wave ,resistive or inductive load. For capacitive load, derate by 20%.)

		Symbols	DB160K	Units
Repetitive Peak Off-state Voltage		V_{DRM}	±90	Volts
Breakover Current 50/60 Hz sine wave		I_{BO}	10	μA
Repetive peak off-state current, 50/60Hz sine wave		I_{DRM}	10	μA
Maximum on-state RMS current, $T_j \leq 110$℃ 50/60Hz sine wave		$I_{T(RMS)}$	1.0	Amp
Breakover voltage 50/60Hz sine wave	MIN	V_{BO}	150	Volts
	MAX		180	
Maximum dynamic holding current 50/60Hz sine wave R=100Ω		I_H	100	mA
Peak one cycle surge current sine wave (non-repetitive)	50Hz	I_{TSM}	16.7	A
	60Hz		20	
Typical peak on-state voltage(I_T=0.6A)		V_{TM}	2.0	Volts
Switching resistance (V_{BO}-V_S)/(I_S-I_{BO}) 60Hzsine wave		R_S	0.1	KΩ
Operating temperature range		T_J	-40 to +110	℃
Operating junction and storage temperature range		T_{STG}	-55 to +150	℃

V-I Characteristics

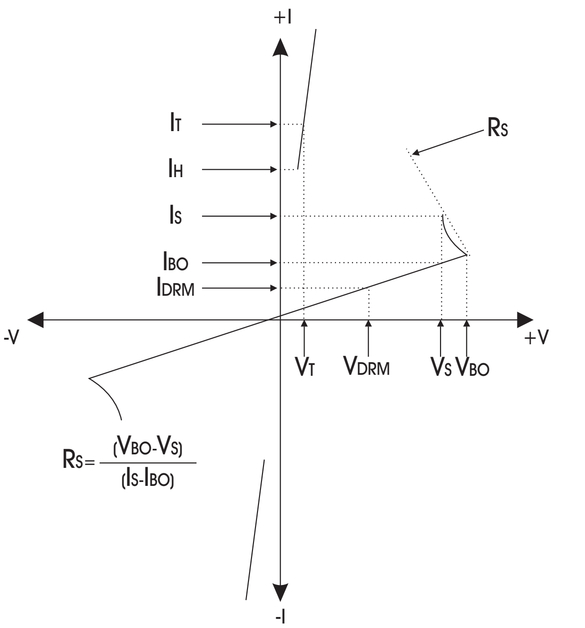


FIG.1 Normalized DC Holding Current vs case/Lead Temperature

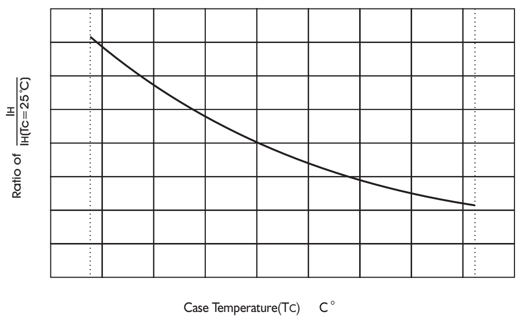
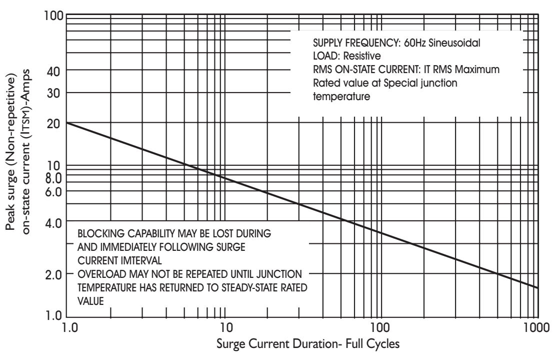


FIG.2 Peak surge current vs surge current duration



RATINGS AND CHARACTERISTIC CURVES DB160K

FIG.3 Maximum Allowable Ambient temperature vs on-stsae Current

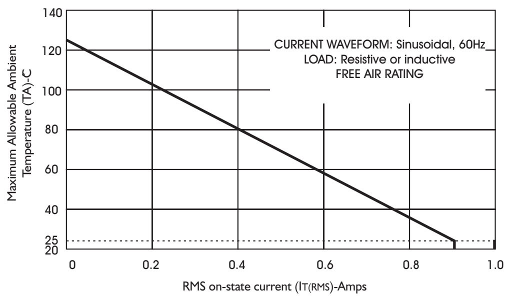


FIG.4 Normalized Repetitive Peak Breakover Current vs Junction Temperature

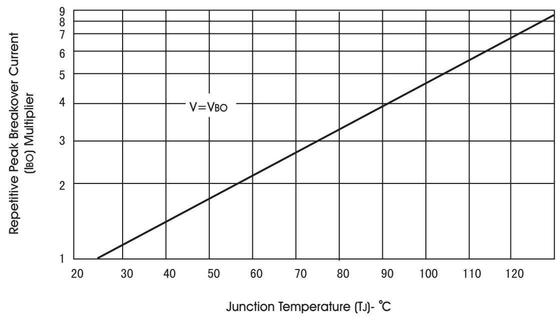


FIG.5 Normalized CBO Changes vs Case Temperature

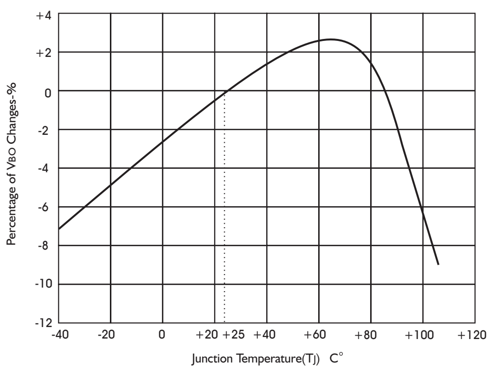


FIG.6 Repetitive Peak On-State Current (ITRM) vs Pulse Width at Various Frequencies

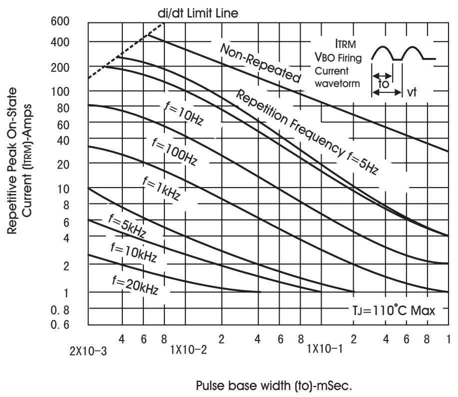


FIG.7 On-State Current vs On-State Voltage

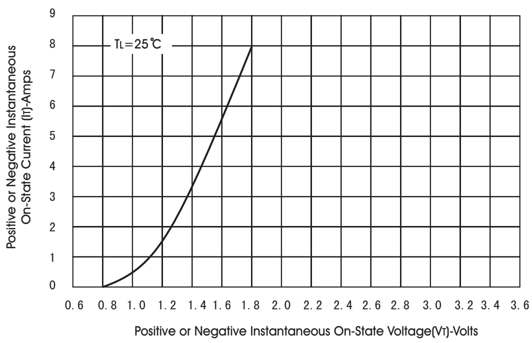


FIG.8 Power Dissipation (Typical) vs On-State Current

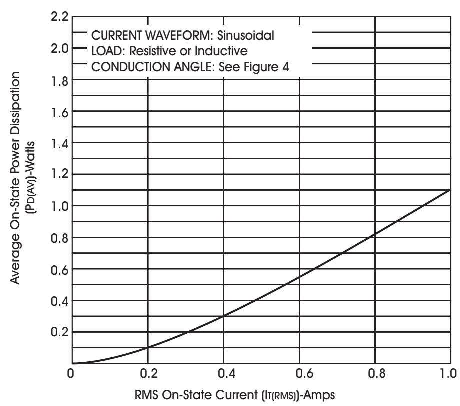


FIG.9 Ignitor Circuit (Low Voltage Input)

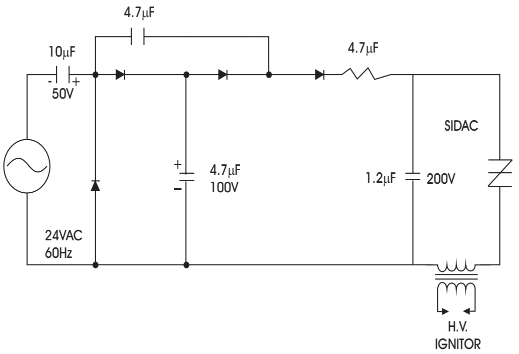


FIG.10 Typical High Pressure Sodium Lamp Firing Circuit

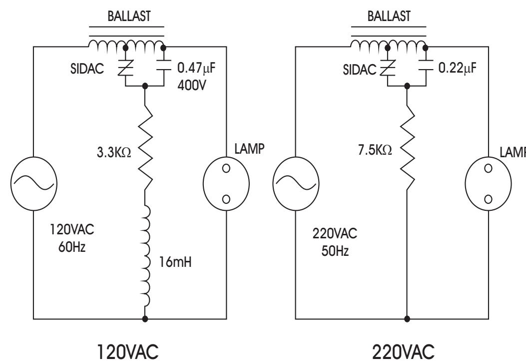


FIG.11 Comparison of SIDAC vs SCR

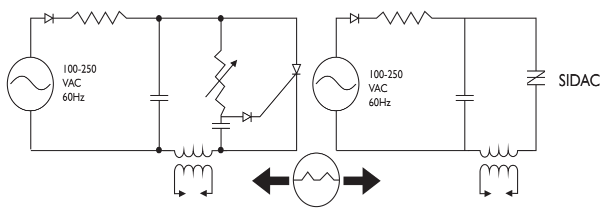


FIG.12 Xenon Lamp Flashing Circuit

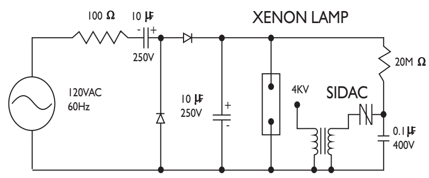


FIG.13 Dynamic Holding Current Test Circuit for SIDAC

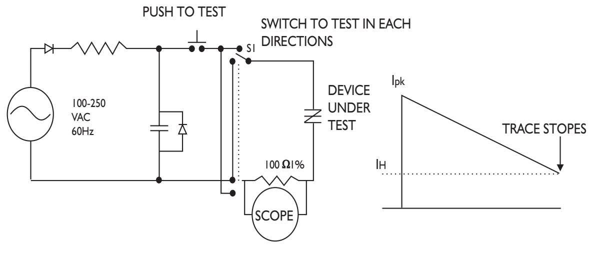


FIG.14 Basic SIDAC Circuit

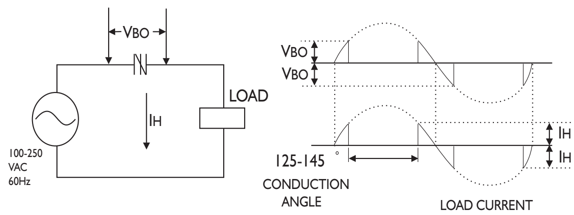
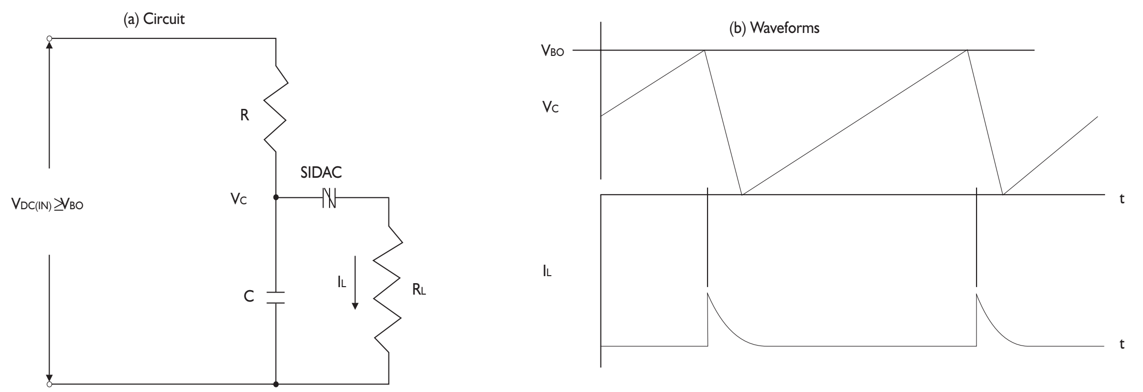
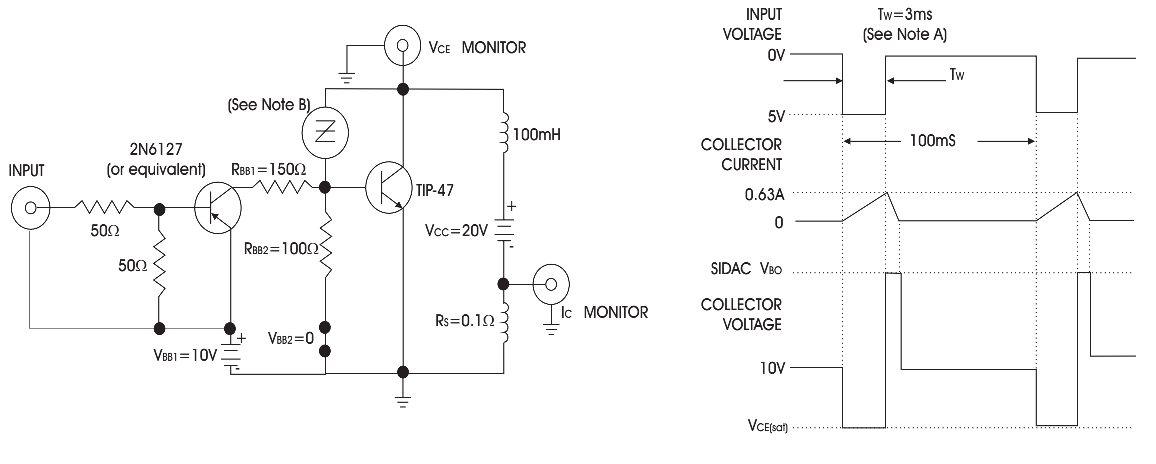


FIG.15 Relaxation Oscillator Using a SIDAC



$R_{max} \geq \frac{V_{IN}-V_{BO}}{I_{BO}}$ $\quad$ $R_{min} \geq \frac{V_{IN}-V_{TM}}{I_{H(MIN)}}$

FIG.16 SIDAC Added To Protect Transistor For Typical Transistor Inductive Load Switching Requirements



TEST CIRCUIT

VOLTAGE AND CURRENT WAVEFORMS

NOTE A: Input pulse width is increased until I_{CM}=0.63A.

NOTE B: Sidac (or Diac or series of diacs) chosen so that V_{BO} is just below V_{CEO} rating of transistor to be protected. The Sidac (or Diac) eliminates a reverse breakdown of the transistor in inductive switching circuits where otherwise the transistor could be destroyed.