

SK255KD



Agency Approval		
Agency	Agency File Number	
A 1	E71639	

Main Features				
Symbol	Value	Unit		
I _{T(RMS)}	55	А		
V _{drm} /V _{rrm}	1200	V		
I _{GT}	50	mA		

Absolute Maximum Ratings

Excellent unidirectional switches for phase control applications such as heating and motor speed controls.

Standard phase control SCRs are triggered with few milliamperes of current at less than 1.5V potential.

Features & Benefits

• RoHS compliant

to 1200 V

- Voltage capability up
- Electrically isolated package "KD-Package" and UL recognized for $2500V_{RMS}$
- Surge capability up to 550 A

Applications

Typical applications are AC solid-state switches, industrial power tools, line rectification 50/60Hz.

Schematic Symbol



Symbol	Parameter	Test Conditions	Value	Unit
$V_{\rm drm}/V_{\rm rrm}$	Repetitive Peak off-state/Reverse Voltage		1200	V
V _{DSM} /V _{RSM}	Non-repetitive peak off-state/Reverse voltage		1300	V
I _{T(RMS)}	RMS on-state current	$T_c = 60^{\circ}C$	55	A
I _{T(AV)}	Average on-state current	$T_c = 60^{\circ}C$	35	A
1	Peak non-repetitive surge current	single half cycle; f = 50Hz; T _J (initial) = 25°C	520	A
I _{TSM}	reak non-repetitive surge current	single half cycle; f = 60Hz; T _J (initial) = 25°C	620	
l²t	l²t Value for fusing	t _p = 8.3 ms	1620	A²s
di/dt	Critical rate of rise of on-state current		150	A/µs
I _{GM}	Peak gate current	T _J = 125°C	3	A
P _{G(AV)}	Average gate power dissipation $T_J = 125^{\circ}C$		1	W
T _{stg}	Storage temperature range		-40 to 150	°C
TJ	Operating junction temperature range	-40 to 125	°C	



Electrical Characteristics (T₁ = 25°C, unless otherwise specified)

Symbol	Test Conditions	Value	Unit	
I _{gt}	V 12V P 20.0	MAX.	50	mA
V _{GT}	$V_{\rm D} = 12V; \ R_{\rm L} = 30 \ \Omega$	MAX.	1.5	V
dv/dt	$V_{\rm D} = 2/3 V_{\rm DRM}$; gate open; $T_{\rm J} = 125^{\circ}{\rm C}$	MIN.	2000	V/µs
V _{GD}	$V_{\rm D} = V_{\rm DRM}$; $R_{\rm L} = 3.3 \text{ k}\Omega$; $T_{\rm J} = 125^{\circ}\text{C}$	MIN.	0.2	V
I _H	I _T = 500mA (initial)	MAX.	120	mA
t _q	I_{T} =0.5A; t _p =50µs; dv/dt=5V/µs; di/dt=-30A/µs	TYP.	20	μs
t _{gt}	I _G = 2 x I _{GT} ; PW = 15μs; I _T = 110A	TYP.	3	μs

Static Characteristics						
Symbol	Test Condition	าร		Value	Unit	
V _{TM}	I _T = 110A; t _p = 380μs		MAX.	1.6	V	
		$T_{J} = 25^{\circ}C$	MAX.	10	μA	
DRM / RRM	I _{DRM} / I _{RRM} V _{DRM} / V _{RRM}		IVIAA.	6	mA	

Thermal Resistances

Symbol	Parameter	Value	Unit
R _{θ(J-C)}	Junction to case (AC)	1.0	°C/W



Figure 2: Normalized DC Gate Trigger Voltage vs. Junction Temperature





Teccor® brand Thyristors

55 Amp Standard SCRs

Figure 3: Normalized DC Holding Current vs. Junction Temperature



Figure 5: Power Dissipation (Typical) vs. RMS On-State Current



Figure 7: Maximum Allowable Case Temperature vs. Average On-State Current



Figure 4: On-State Current vs. On-State Voltage (Typical)



Figure 6: Maximum Allowable Case Temperature vs. RMS On-State Current





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Figure 8: Surge Peak On-State Current vs. Number of Cycles





SUPPLY FREQUENCY: 50 Hz Sinusoidal LOAD: Resistive RMS On-State Current: [I_{T(RMS)}]: Maximum Rated Value at Specified Case Temperature

Notes:

- 1. Gate control may be lost during and immediately following surge current interval.
- 2. Overload may not be repeated until junction temperature has returned to steady-state rated value.

Design Considerations

Careful selection of the correct device for the application's operating parameters and environment will go a long way toward extending the operating life of the Thyristor. Good design practice should limit the maximum continuous current through the main terminals to 75% of the device rating. Other ways to ensure long life for a power discrete semiconductor are proper heat sinking and selection of voltage ratings for worst case conditions. Overheating, overvoltage (including dv/dt), and surge currents are the main killers of semiconductors. Correct mounting, soldering, and forming of the leads also help protect against component damage.

Environmental Specifications

Test	Specifications and Conditions
AC Blocking	JESD22-A108C, 80% V _{DRM} @125°C for 168 hours
Temperature Cycling	JESD22-A104D, M-1051, 50 cycles; -50°C to +150°C; 15-min dwell-time
Temperature/ Humidity	EIA / JEDEC, JESD22-A101 168 hours; 100V - DC: 85°C; 85% rel humidity
Resistance to Solder Heat	JESD22-B106C
Solderability	ANSI/J-STD-002, category 3, Test A

Dimensions – TO-218AC (KD Package) – Isolated Mounting Tab Common with Center Lead



Note: Maximum torque to be applied to mounting tab is 7 in-lbs. (0.8 Nm).

Dimension	Millimeters		Inches			
Dimension	Min.	Тур.	Max.	Min.	Тур.	Max.
А	4.40		4.60	0.173		0.181
В	1.45		1.55	0.057		0.061
С	14.35		15.60	0.565		0.614
D	0.50		0.70	0.020		0.028
E	2.70		2.90	0.106		0.114
F	15.80		16.50	0.622		0.650
G	20.40		21.10	0.803		0.831
Н	15.10		15.50	0.594		0.610
J	5.40		5.65	0.213		0.222
K	1.10		1.40	0.043		0.055
L	1.35		1.50	0.053		0.059
Р	2.80		3.00	0.110		0.118
R		4.35			0.171	



Product Selector

Part Number	Gate Sensitivity	Туре	Package
SK255KD	50mA	Standard SCR	TO-218AC

Packing Options

Part Number	Marking	Weight	Packing Mode	Base Quantity
SK255KDTP	SK255KD	4.8g	Tube	450 (30 per tube)

Part Numbering System

