

TECHNICAL DATA  
DATA SHEET 5574, REV A

**MOS Gated Thyristor  
(1500V)**

**DESCRIPTION:** A 1500 VOLT MOS GATED THYRISTOR IN A SURFACE MOUNT PACKAGE.

**ELECTRICAL CHARACTERISTICS**

ALL RATINGS ARE @  $T_c = 25^\circ\text{C}$  UNLESS OTHERWISE SPECIFIED.

RATING	SYMBOL	Min	Typical	Max	Units
PEAK INVERSE VOLTAGE, $I_A = 250\mu\text{A}$ , $V_{GK} = 0\text{V}$ (Blocking voltage)	$V_{AK}$	-	-	1500	V
Cathode Leakage Current $V_{AK}=1500\text{V}$ , $V_{GK} = 0\text{V}$	$I_D$	-	15	50	$\mu\text{A}$
Maximum DC Gate Voltage	$V_{GK}$	- 30	-	+ 30	V
Gate Leakage Current, $V_{AK}=0\text{V}$ , $V_{GK}=\pm 30\text{V}$		-	-	+/- 200	nA
Gate Threshold Voltage $V_{AK}=V_{GK}$ , $I_A = 250\mu\text{A}$	$V_{GK(TH)}$	2.5	-	5.0	v
Repetitive Peak Forward Anode Current (Pulse Width < 1 $\mu\text{s}$ , Frequency < 10Hz) (Verified only for qualification)	$I_A$	-	-	2500	A
$V_{GK}=15\text{V}$ , $I_A=350\text{A}$	$V_T$	-	5	-	V
$V_{GK}=15\text{V}$ , $I_A > 160\text{A}$	$r_T$	-	1.8	-	m $\Omega$
Forward Voltage Drop $V_{GK}=15\text{V}$ , $I_A=350\text{A}$ Refer to Figs 1, 2, 3 (Device is on)	$V_{AK}$	-	5.6	-	V
Capacitive Discharge $I_A= 2000\text{A}$ , $V_{GK}=15\text{V}$ $R_G=1\text{ ohm}$ , $V_{AK}=1000\text{V}$ , $L < 20\text{nH}$ $di/dt$ – refer to Appendix 1	$t_r$ $t_d$	- -	100 50 45	- -	nsec nsec kA/nsec
MAXIMUM THERMAL RESISTANCE Junction to Case (solder pads) <b>(SHD763701)</b> Junction to Case (solder pads) <b>(SHD763701-1)</b>	$R_{\theta JC}$	-	3.5 13	-	$^\circ\text{C/W}$
MAXIMUM STORAGE TEMPERATURE RANGE	$T_{stg}$	-55		+ 150	$^\circ\text{C}$
MAXIMUM OPERATING TEMPERATURE RANGE	$T_{op}$	-55		+ 100	$^\circ\text{C}$



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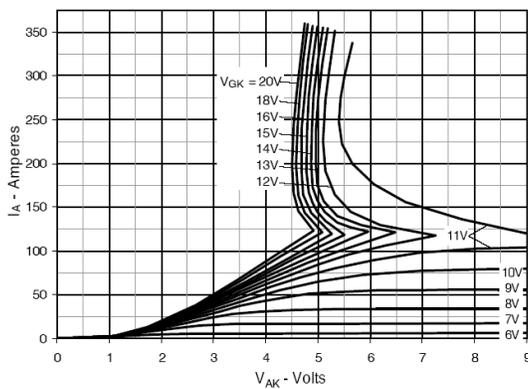


**SYMBOL**

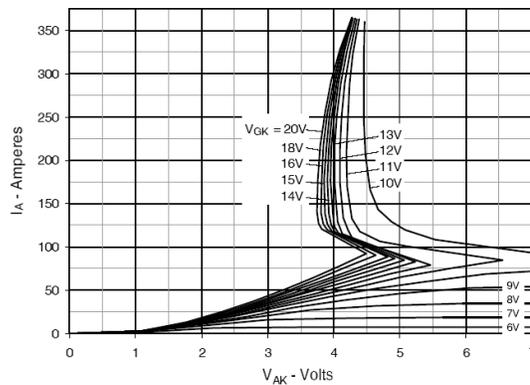
**PINOUT TABLE**

PART NUMBER	ANODE	CATHODE	GATE	GATE RETURN
SHD763701	Pins 6,7,8,9,10	Pins 3,4,5	Pin 1	Pin 2
SHD763701-1	Pins 5,6,7,8	Pins 3,4	Pin 1	Pin 2

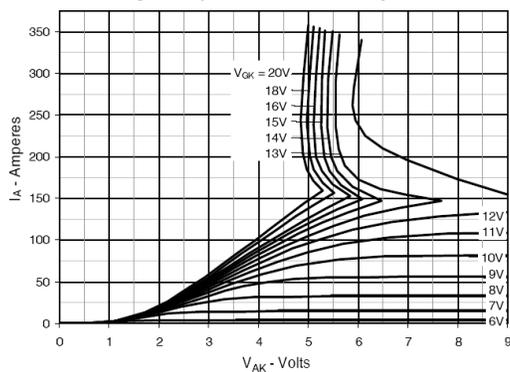
**Note:** Do not connect Gate Return to Cathode on PCB.



**Fig 1: Extended Output Characteristics @ T<sub>J</sub> = 25°C**



**Fig 2: Extended Output Characteristics @ T<sub>J</sub> = 100°C**



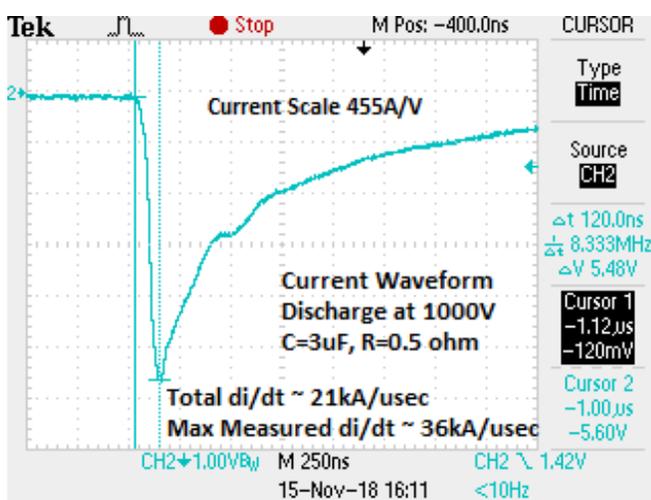
**Fig 3: Extended Output Characteristics @ T<sub>J</sub> = -40°C**

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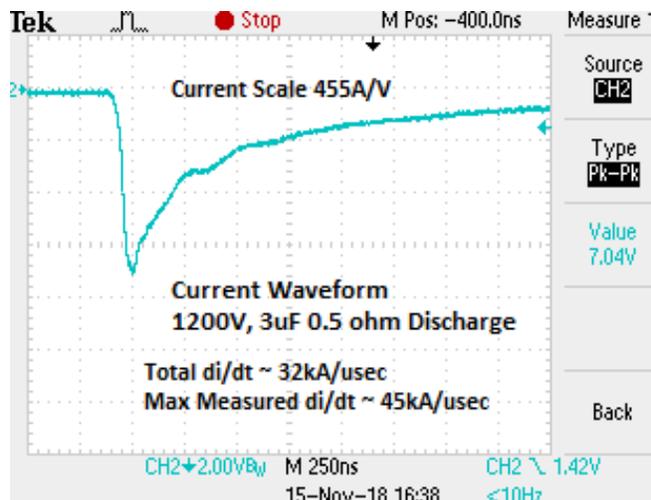
**Appendix 1: Test Data**

Test Setup

- A ceramic capacitor is used as a capacitive storage. Total Capacitance 3.3uF. However, the total capacitance will drop down by about 50% when charged to 1200V. The effective discharge capacitance is ~1.6uF.
- The discharge current is limited by metal resistors with total value of 0.5 Ohms.
- The current is monitored across a sense resistor  $R_s$  of 2.2 mOhm.
- The tests show a peak current higher than the calculated value by about 20%. This is due to scope probe common mode noise.
- The current rise time is 120nsec with  $di/dt \sim 21kA/usec$ .
- The discharge test was done at bus voltage from 100V to 1200V.



Current Waveform at 1000V,  
& discharge resistance of 0.5 ohm



Current Waveform at 1200V  
& discharge resistance of 0.5 ohm

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