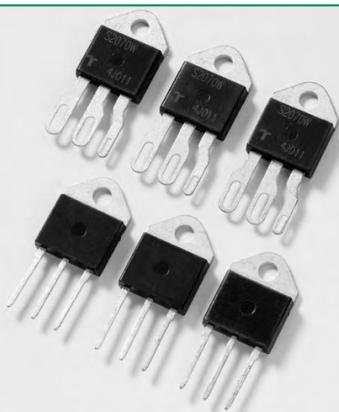


Sxx65x & Sxx70x Series



Description

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

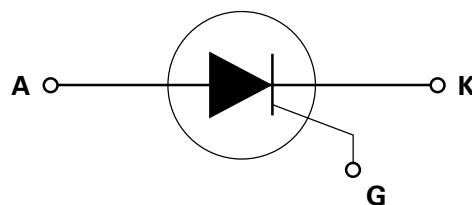
- RoHS compliant
- Glass – passivated junctions
- Voltage capability up to 1000 V
- Surge capability up to 950 A

Applications

Typical applications are AC solid-state switches, industrial power tools, exercise equipment, white goods and commercial appliances.

Internally constructed isolated packages are offered for ease of heat sinking with highest isolation voltage.

Schematic Symbol



Agency Approval

Agency	Agency File Number
	J & K Packages: E71639

Main Features

Symbol	Value	Unit
$I_{T(RMS)}$	65 & 70	A
V_{DRM}/V_{RRM}	400 to 1000	V
I_{GT}	50	mA

Absolute Maximum Ratings

Symbol	Parameter	Test Conditions	Value	Unit
$I_{T(RMS)}$	RMS on-state current	Sxx65J Sxx65K	65	A
		Sxx70W	70	
$I_{T(AV)}$	Average on-state current	Sxx65J Sxx65K	41.0	A
		Sxx70W	45.0	
I_{TSM}	Peak non-repetitive surge current	single half cycle; $f = 50\text{Hz}$; T_j (initial) = 25°C	800	A
		single half cycle; $f = 60\text{Hz}$; T_j (initial) = 25°C	950	
I^2t	I^2t Value for fusing	$t_p = 8.3 \text{ ms}$	3745	A^2s
di/dt	Critical rate of rise of on-state current	$f = 60\text{Hz}; T_j = 125^\circ\text{C}$	200	$\text{A}/\mu\text{s}$
I_{GM}	Peak gate current	$T_j = 125^\circ\text{C}$ $P_w = 15 \mu\text{S Max}$	5.0	A
$P_{G(AV)}$	Average gate power dissipation	$T_j = 125^\circ\text{C}$	1.0	W
T_{stg}	Storage temperature range		-40 to 150	°C
T_j	Operating junction temperature range		-40 to 125	°C

Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions			Value	Unit
I_{GT}	$V_D = 12\text{V}; R_L = 30\ \Omega$		MAX.	50	mA
			MIN.	5	
V_{GT}			MAX.	2.0	
dv/dt	$V_D = V_{DRM}$; gate open; $T_J = 100^\circ\text{C}$	400V	MIN.	650	V/ μs
		600V		600	
		800V		500	
		1000V		250	
	$V_D = V_{DRM}$; gate open; $T_J = 125^\circ\text{C}$	400V		550	
		600V		500	
		800V		475	
V_{GD}	$V_D = V_{DRM}$; $R_L = 3.3\ \text{k}\Omega$; $T_J = 125^\circ\text{C}$		MIN.	0.2	V
I_H	$I_T = 400\text{mA}$ (initial)		MAX.	80	mA
t_q	(1)		MAX.	35	μs
t_{gt}	$I_G = 2 \times I_{GT}$; PW = 15 μs ; $I_T = 140\text{A}$		TYP.	2.5	μs

Note :

(1) $I_T=2\text{A}$; $t_p=50\mu\text{s}$; $dv/dt=5\text{V}/\mu\text{s}$; $di/dt=-30\text{A}/\mu\text{s}$ **Static Characteristics**

Symbol	Test Conditions			Value	Unit
V_{TM}	65A Device $I_T = 130\text{A}$; $t_p = 380\mu\text{s}$		MAX.	1.8	V
	70A Device $I_T = 140\text{A}$; $t_p = 380\mu\text{s}$				
I_{DRM} / I_{RRM}	V_{DRM} / V_{RRM}	$T_J = 25^\circ\text{C}$	400 – 800V	20	μA
			1000V		
		$T_J = 100^\circ\text{C}$	400 – 600V		
			800V	1500	
			1000V	2000	
		$T_J = 125^\circ\text{C}$	400V – 600V	5000	
			800V	3000	
				5000	

Thermal Resistances

Symbol	Parameter		Value	Unit
$R_{\theta(J-C)}$	Junction to case (AC)		Sxx65J Sxx65K	$^\circ\text{C}/\text{W}$
			Sxx70W	

Note: xx = voltage

Additional Information

Datasheet



Resources



Samples

Figure 1: Normalized DC Gate Trigger Current vs. Junction Temperature

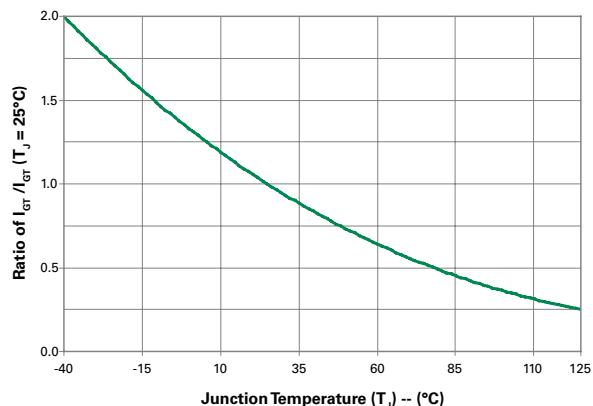


Figure 2: Normalized DC Gate Trigger Voltage vs. Junction Temperature

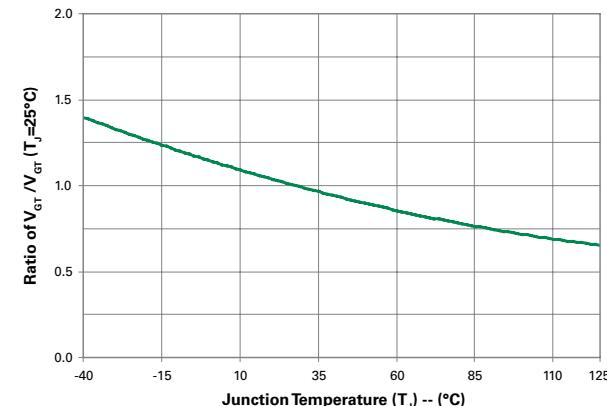


Figure 3: Normalized DC Holding Current vs. Junction Temperature

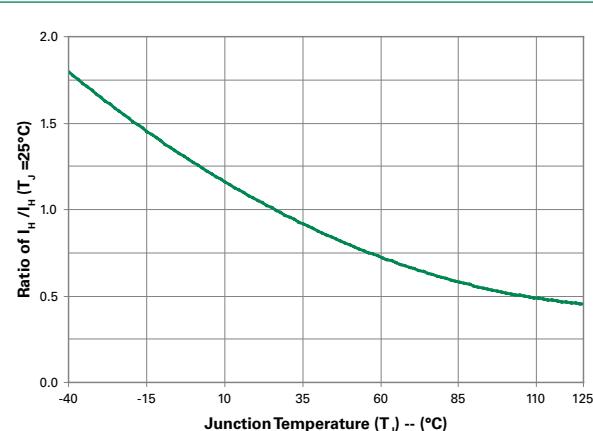


Figure 4: On-State Current vs. On-State Voltage (Typical)

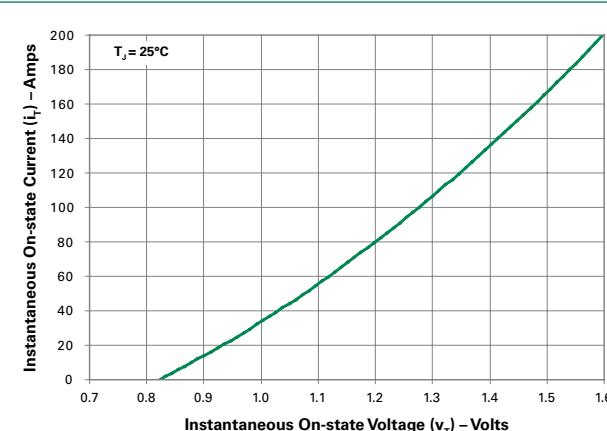


Figure 5: Power Dissipation (Typical) vs. RMS On-State Current

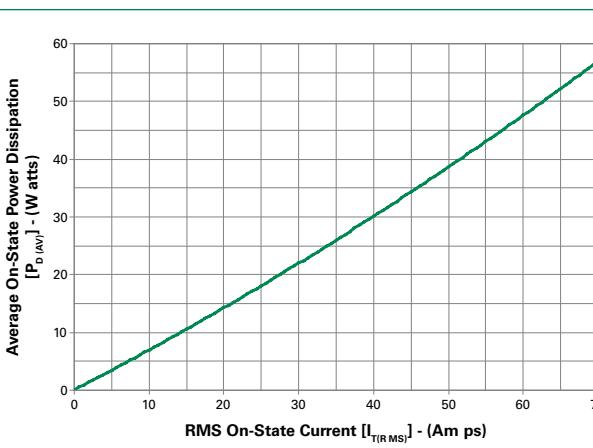
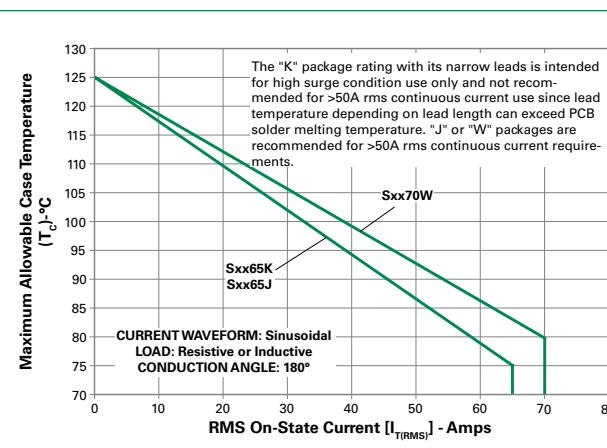
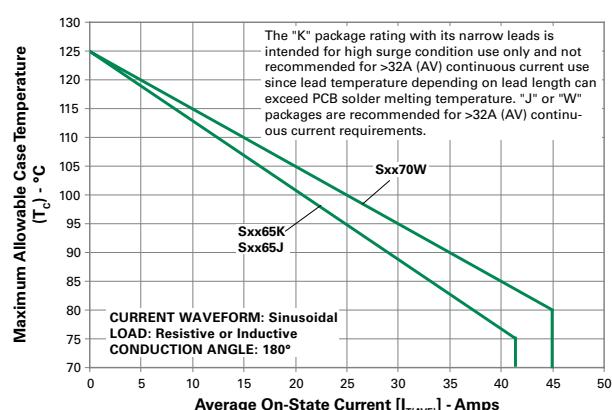
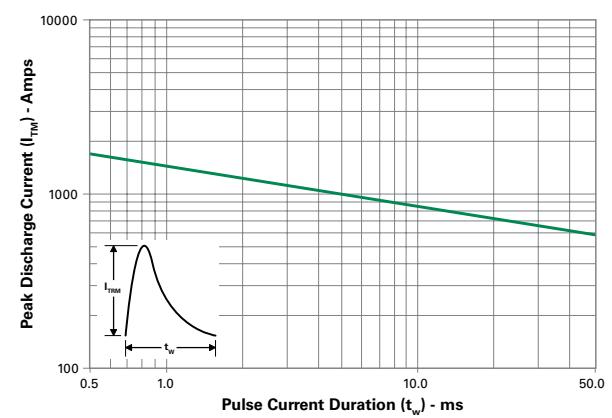
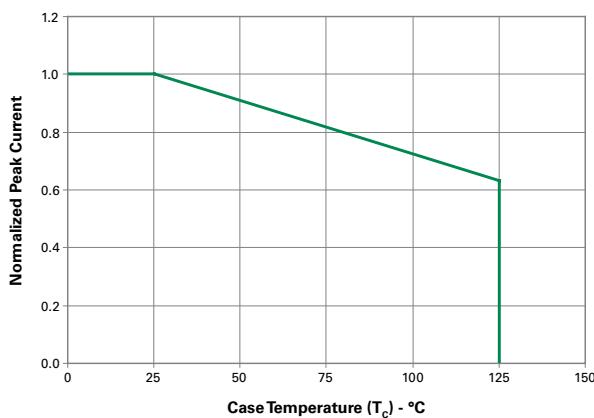
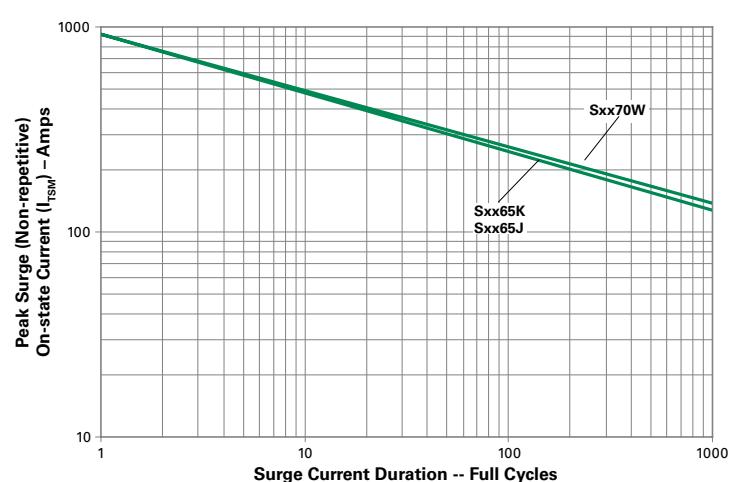


Figure 6: Maximum Allowable Case Temperature vs. RMS On-State Current



Note: xx = voltage

Figure 7: Maximum Allowable Case Temperature vs. Average On-State Current**Figure 8: Peak Capacitor Discharge Current****Figure 9: Peak Capacitor Discharge Current Derating****Figure 10: Surge Peak On-State Current vs. Number of Cycles**

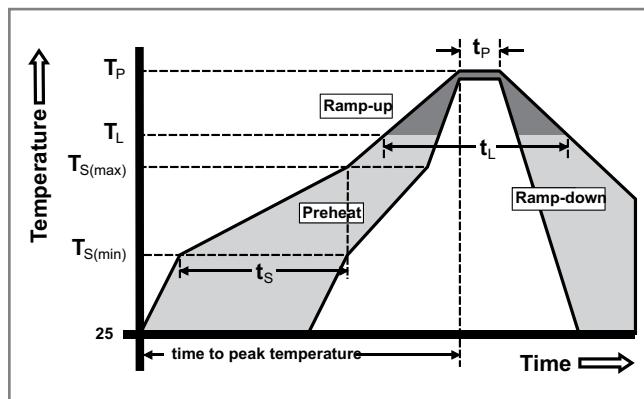
SUPPLY FREQUENCY: 60 Hz Sinusoidal
LOAD: Resistive
RMS On-State Current: $I_{T(RMS)}$: Maximum Rated Value at Specified Case Temperature

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.

Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ($T_{s(\min)}$)	150°C
	- Temperature Max ($T_{s(\max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		5°C/second max
$T_{S(\max)}$ to T_L - Ramp-up Rate		5°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		280°C



Physical Specifications

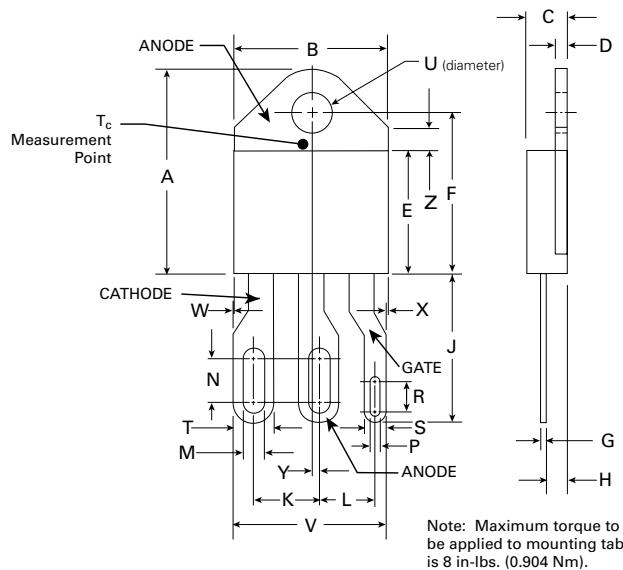
Terminal Finish	100% Matte Tin-plated
Body	UL recognized epoxy meeting flammability classification 94V-0
Lead Material	Copper Alloy

Design Considerations

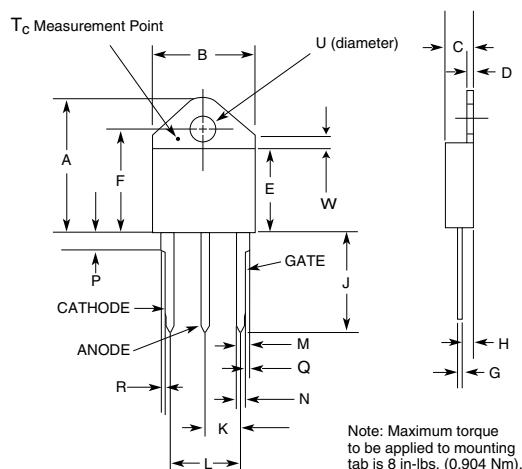
Careful selection of the correct device for the application's operating parameters and environment will go a long way toward extending the operating life of the Thyristor. Good design practice should limit the maximum continuous current through the main terminals to 75% of the device rating. Other ways 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

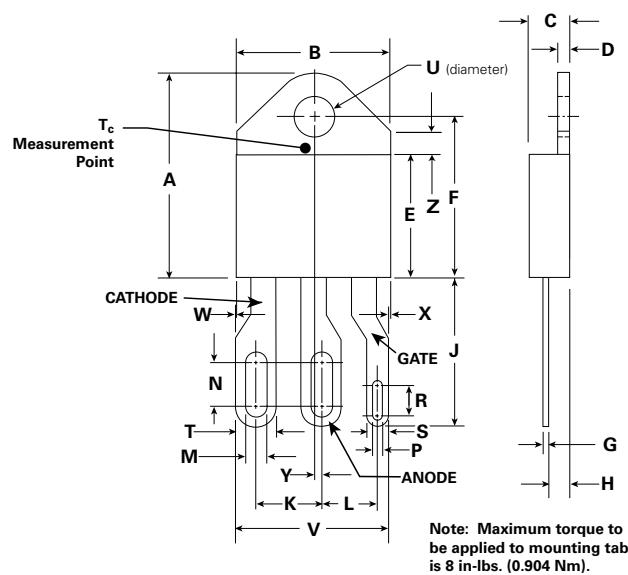
Test	Specifications and Conditions
AC Blocking	MIL-STD-750, M-1040, Cond A Applied Peak AC voltage @ 125°C for 1008 hours
Temperature Cycling	MIL-STD-750, M-1051, 100 cycles; -40°C to +150°C; 15-min dwell-time
Temperature/Humidity	EIA / JEDEC, JESD22-A101 1008 hours; 320V - DC: 85°C; 85% rel humidity
High Temp Storage	MIL-STD-750, M-1031, 1008 hours; 150°C
Low-Temp Storage	1008 hours; -40°C
Resistance to Solder Heat	MIL-STD-750 Method 2031
Solderability	ANSI/J-STD-002, category 3, Test A
Lead Bend	MIL-STD-750, M-2036 Cond E

Dimensions – TO-218X (W Package) — Non-Isolated Mounting Tab common with Center Lead


Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.810	0.835	20.57	21.21
B	0.610	0.630	15.49	16.00
C	0.178	0.188	4.52	4.78
D	0.055	0.070	1.40	1.78
E	0.487	0.497	12.37	12.62
F	0.635	0.655	16.13	16.64
G	0.022	0.029	0.56	0.74
H	0.075	0.095	1.91	2.41
J	0.575	0.625	14.61	15.88
K	0.256	0.264	6.50	6.71
L	0.220	0.228	5.58	5.79
M	0.080	0.088	2.03	2.24
N	0.169	0.177	4.29	4.49
P	0.034	0.042	0.86	1.07
R	0.113	0.121	2.87	3.07
S	0.086	0.096	2.18	2.44
T	0.156	0.166	3.96	4.22
U	0.164	0.165	4.10	4.20
V	0.603	0.618	15.31	15.70
W	0.000	0.005	0.00	0.13
X	0.003	0.012	0.07	0.30
Y	0.028	0.032	0.71	0.81
Z	0.085	0.095	2.17	2.42

Dimensions – TO-218AC (K Package) — Isolated Mounting Tab


Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.810	0.835	20.57	21.21
B	0.610	0.630	15.49	16.00
C	0.178	0.188	4.52	4.78
D	0.055	0.070	1.40	1.78
E	0.487	0.497	12.37	12.62
F	0.635	0.655	16.13	16.64
G	0.022	0.029	0.56	0.74
H	0.075	0.095	1.91	2.41
J	0.575	0.625	14.61	15.88
K	0.211	0.219	5.36	5.56
L	0.422	0.437	10.72	11.10
M	0.058	0.068	1.47	1.73
N	0.045	0.055	1.14	1.40
P	0.095	0.115	2.41	2.92
Q	0.008	0.016	0.20	0.41
R	0.008	0.016	0.20	0.41
U	0.164	0.165	4.10	4.20
W	0.085	0.095	2.17	2.42

Dimensions – TO-218X (J Package) — Isolated Mounting Tab


Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.810	0.835	20.57	21.21
B	0.610	0.630	15.49	16.00
C	0.178	0.188	4.52	4.78
D	0.055	0.070	1.40	1.78
E	0.487	0.497	12.37	12.62
F	0.635	0.655	16.13	16.64
G	0.022	0.029	0.56	0.74
H	0.075	0.095	1.91	2.41
J	0.575	0.625	14.61	15.88
K	0.256	0.264	6.50	6.71
L	0.220	0.228	5.58	5.79
M	0.080	0.088	2.03	2.24
N	0.169	0.177	4.29	4.49
P	0.034	0.042	0.86	1.07
R	0.113	0.121	2.87	3.07
S	0.086	0.096	2.18	2.44
T	0.156	0.166	3.96	4.22
U	0.164	0.165	4.10	4.20
V	0.603	0.618	15.31	15.70
W	0.000	0.005	0.00	0.13
X	0.003	0.012	0.07	0.30
Y	0.028	0.032	0.71	0.81
Z	0.085	0.095	2.17	2.42

Product Selector

Part Number	Voltage				Gate Sensitivity	Type	Package
	400V	600V	800V	1000V			
Sxx65K	X	X	X	X	50mA	Standard SCR	TO-218AC
Sxx65J	X	X	X		50mA	Standard SCR	TO-218X
Sxx70W	X	X	X		50mA	Standard SCR	TO-218X

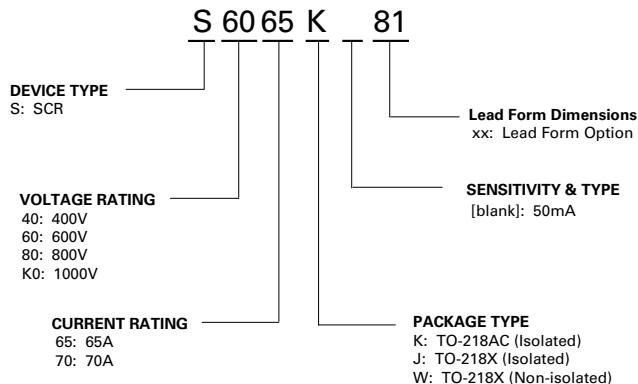
Note: xx = Voltage

Packing Options

Part Number	Marking	Weight	Packing Mode	Base Quantity
Sxx65KTP	Sxx65K	4.40g	Tube	250 (25 per tube)
Sxx65JTP	Sxx65J	5.23g	Tube	250 (25 per tube)
Sxx70WTP	Sxx70W	5.23g	Tube	250 (25 per tube)

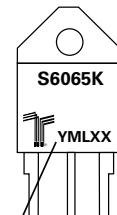
Note: xx = Voltage

Part Numbering System



Part Marking System

TO-218AC - (K Package)
TO-218X - (J Package)
TO-218X - (W Package)



Date Code Marking
Y: Year Code
M: Month Code
L: Location Code
XX: Lot Serial Code



OCEAN CHIPS

Океан Электроники

Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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