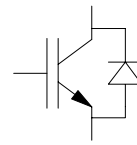




# SOLID STATE DEVICES, INC.

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ssdi@ssdi-power.com \* www.ssdi-power.com

## SSG42N60 SERIES



**50 AMP  
600 VOLTS  
FAST  
POWER IGBT**

### DESIGNER'S DATA SHEET

#### Part Number /Ordering Information <sup>1/</sup>

**SSG42N60 N TX**

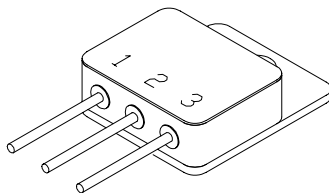
- Screening <sup>2/</sup>: \_ = Not Screened
  - TX = TX Level
  - TXV = TXV Level
  - S = Space Level
- Lead Bend <sup>3/4/</sup>: \_ = Straight
  - UB = Up Bend
  - DB = Down Bend
- Package: <sup>3/</sup> N = TO-258, Isolated
  - P = TO-259, Isolated
  - S2 = SMD2

#### APPLICATION NOTES:

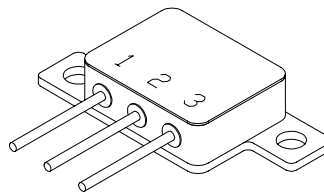
- 600V IGBT Technology
- Positive Temperature Coefficient for Ease of Paralleling
- High Current Switching for Motor Drives and Inverters
- Low Saturation Voltage at High Currents.
- Low Switching Losses.
- High Short Circuit Capability
- MOS Input, Voltage Controlled.
- Ultra Fast Free Wheeling Diodes
- Hermetic Sealed Construction.
- TX, TXV, and S-Level Screening Available.

MAXIMUM RATINGS	SYMBOL	VALUE	UNITS
Collector-Emitter Voltage	$V_{CEO}$	600	Volts
Continuous Collector Current @ $T_C = 25^\circ C$	$I_C$	70	Amps
Average Diode Current @ $T_C = 25^\circ C$	$I_O$	40	
Peak Collector Current	$I_{C(pk)}$ $I_{IFSM}$	140 300	Amps
Gate Emitter Voltage	$V_{GE}$	$\pm 20$	Volts
Operating and Storage Temperature	$T_J, T_{STG}$	-65 to +200	$^\circ C$
Total Device Dissipation @ $T_C = 25^\circ C$	$P_D$	200	W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.8 0.7	$^\circ C/W$

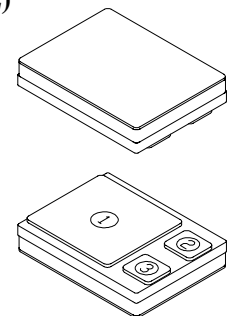
TO-258 (N)



TO-259 (P)



SMD2 (S2)



NOTE: All specifications are subject to change without notification.  
SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: TG0002A

# SSG42N60 SERIES



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ELECTRICAL CHARACTERISTICS <sup>5/</sup>		SYMBOL	MIN	TYP	MAX	UNITS
<b>Collector - Emitter Breakdown Voltage</b> (V <sub>GE</sub> = 0V, I <sub>C</sub> = 2mA)		V <sub>(BR)CES</sub>	600	-	-	V
<b>Collector - Emitter Saturation Voltage</b> (V <sub>GE</sub> = 15V, I <sub>C</sub> = 50A)		V <sub>CE (SAT)</sub>	-	2	2.5	V
<b>Gate - Emitter Threshold Voltage</b> (V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 1mA)		V <sub>GE (th)</sub>	3	4	5	V
<b>Zero Gate Voltage Collector Current</b> (V <sub>CE</sub> = 600V, V <sub>GE</sub> = 0V)		I <sub>CES</sub>	T <sub>J</sub> = 25°C -	-	150	μA
			T <sub>J</sub> = 100°C -	-	12	mA
<b>Gate - Emitter Leakage Current</b> (V <sub>GE</sub> = 30V, V <sub>CE</sub> = 0V)		I <sub>GES</sub>	-	-	120	nA
<b>Input Capacitance</b> (V <sub>CE</sub> = 25V, V <sub>GE</sub> = 0V, f = 1MHz)		C <sub>iss</sub>	-	2750	-	pF
<b>Output Capacitance</b> (V <sub>CE</sub> = 25V, V <sub>GE</sub> = 0V, f = 1MHz)		C <sub>oss</sub>	-	250	-	pF
<b>Reverse Transfer Capacitance</b> (V <sub>CE</sub> = 25V, V <sub>GE</sub> = 0V, f = 1MHz)		C <sub>rss</sub>	-	50	-	pF
<b>Turn-On Delay Time</b>	(V <sub>CC</sub> = 400V, I <sub>C</sub> = 50A <sub>DC</sub> , V <sub>GE</sub> = 15 / 0V, R <sub>G</sub> = --Ω, t <sub>p</sub> = 10μsec, Duty Cycle ≤ 1% T <sub>j</sub> = 150°C)	t <sub>d(on)</sub>	-	25	-	nsec
<b>Rise Time</b>		t <sub>r</sub>	-	30	-	nsec
<b>Turn-Off Delay Time</b>		t <sub>d(off)</sub>	-	500	-	nsec
<b>Fall Time</b>		t <sub>f</sub>	-	360	-	nsec
<b>Reverse Diode Forward Voltage Drop</b> (V <sub>GE</sub> = 0V)		V <sub>F</sub>	I <sub>F</sub> = 20A -	-	1.35	V
			I <sub>F</sub> = 40A -	-	1.55	
<b>Reverse Diode Reverse Recovery Time</b> (I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1A, I <sub>RR</sub> = 0.25A)		t <sub>RR</sub>	-	-	35	nsec

**NOTES:**

- \* Pulse Test: Pulse Width = 300us, Duty Cycle = 2%
- 1/ For Ordering Information, Price, and Availability Contact Factory.
- 2/ Screening per MIL-PRF-19500.
- 3/ For Package Outlines Contact Factory.
- 4/ Up and Down Bend Configurations Available for N and P (TO-258 and TO-259) Packages Only.
- 5/ All Electrical Characteristics @25°C, Unless Otherwise Specified.

**Available Part Numbers:**

SSG42N60N SSG42N60NDB SSG42N60NUB  
SSG42N60P SSG42N60PDB SSG42N60PUB  
SSG42N60S2

**PIN ASSIGNMENT**

PACKAGE	Collector	Emitter	Gate
TO-258	Pin1	Pin 2	Pin 3
TO-259	Pin 1	Pin 2	Pin 3
SMD2	Pin 1	Pin 2	Pin 3