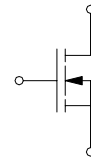




# SOLID STATE DEVICES, INC.

14830 Valley View Blvd \* La Mirada, Ca 90638  
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ssdi@ssdi-power.com \* www.ssdi-power.com

## SFF70N04 SERIES



**70 AMP / 40 VOLTS**  
**0.010 Ω**  
**N-CHANNEL**  
**POWER MOSFET**

### DESIGNER'S DATA SHEET

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

**SFF70N04 S.5 TX**

Screening <sup>2/</sup>: \_ = Not Screened

TX = TX Level

TXV = TXV Level

S = Space Level

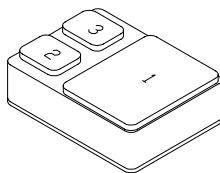
Package: <sup>3/</sup> S.5 = SMD.5

#### APPLICATION NOTES:

- Low RDS (on) and High Transconductance
- Excellent High Temperature Stability
- Fast Switching Speed
- Intrinsic Rectifier
- Hermetically Sealed Package
- TX, TXV, and Space Level Screening Available

MAXIMUM RATINGS	SYMBOL	VALUE	UNITS
Drain-Source Voltage	V <sub>DS</sub>	40	Volts
Gate-Source Voltage	V <sub>GS</sub>	E 20	Volts
Continuous Collector Current @ T <sub>C</sub> = 25°C @ T <sub>C</sub> = 100°C	I <sub>C</sub>	56 <sup>5/</sup> 47	Amps
Pulsed Drain Current	I <sub>DM</sub>	140	Amps
Avalanche Current	I <sub>AR</sub>	60	Amps
Repetitive Avalanche Energy	E <sub>AR</sub>	180	mJ
Operating and Storage Temperature	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C
Total Device Dissipation @ T <sub>C</sub> = 25°C	P <sub>D</sub>	107	W
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	1.1	°C/W

#### SMD.5 (S.5)



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

**DATA SHEET #:** F00002B

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ELECTRICAL CHARACTERISTICS <sup>4/</sup>		SYMBOL	MIN	TYP	MAX	UNITS
<b>Drain - Source Breakdown Voltage</b> (V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA)		V <sub>(BR)DSS</sub>	40	-	-	V
<b>Gate Threshold Voltage</b> (V <sub>DS</sub> = V <sub>GS</sub> , I <sub>DS</sub> = 250μA)		V <sub>GS(th)</sub>	1	-	3	V
<b>Gate - Emitter Leakage Current</b> (V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V)		I <sub>GSS</sub>	-	-	E 100	nA
<b>Zero Gate Voltage Drain Current</b> (V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V)		I <sub>DSS</sub>	T <sub>J</sub> = 25°C -	-	1	μA
			T <sub>J</sub> = 125°C -	-	50	
<b>On-State Drain Current *</b> (V <sub>DS</sub> = 5V, V <sub>GS</sub> = 10V)		I <sub>D(on)</sub>	70	-	-	A
<b>Drain-Source On-State Resistance *</b> V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 20A		R <sub>DS(on)</sub>	T <sub>J</sub> = 25°C -	0.008	0.010	Ω
			T <sub>J</sub> = 125°C -	0.014	0.017	
			T <sub>J</sub> = 25°C -	0.011	0.014	
			T <sub>J</sub> = 125°C -	0.019	0.024	
<b>Forward Transconductance *</b> (V <sub>DS</sub> = 15V, I <sub>D</sub> = 30A)		g <sub>fs</sub>	20	57	-	S
<b>Input Capacitance</b>	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz	C <sub>iss</sub>	-	2700	-	pF
<b>Output Capacitance</b>		C <sub>oss</sub>	-	600	-	pF
<b>Reverse Transfer Capacitance</b>		C <sub>rss</sub>	-	160	-	pF
<b>Total Gate Charge</b>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 70A	Q <sub>g</sub>	-	50	100	nC
<b>Gate - Source Charge</b>		Q <sub>gs</sub>	-	10	-	nC
<b>Gate - Drain Charge</b>		Q <sub>gd</sub>	-	9	-	nC
<b>Turn-On Delay Time</b>	V <sub>DD</sub> = 15V, I <sub>D</sub> = 70A, V <sub>GEN</sub> = 10V, R <sub>L</sub> = 0.2Ω, R <sub>G</sub> = 2.5Ω	t <sub>d(on)</sub>	-	14	30	nsec
<b>Rise Time</b>		t <sub>r</sub>	-	12	30	nsec
<b>Turn-Off Delay Time</b>		t <sub>d(off)</sub>	-	58	100	nsec
<b>Fall Time</b>		t <sub>f</sub>	-	30	60	nsec
<b>Reverse Diode Forward Voltage Drop</b> (I <sub>F</sub> = 70A, V <sub>GS</sub> = 0V)		V <sub>F</sub>	-	1.0	1.5	V
<b>Reverse Diode Reverse Recovery Time</b> (I <sub>F</sub> = 70A, di/dt = 100A/μs)		t <sub>RR</sub>	-	50	100	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/ All Electrical Characteristics @25°C, Unless Otherwise Specified.
- 5/ Current Limited by Package, Die Rated at 70A

**Available Part Numbers:**  
SFF70N04S.5

**PIN ASSIGNMENT**

PACKAGE	Drain	Source	Gate
SMD.5	Pin1	Pin 2	Pin 3