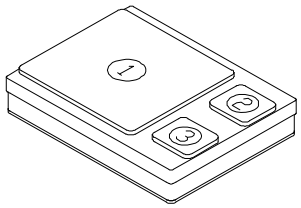
Solid State Devices, Inc.
14701 Firestone Blvd * La Mirada, Ca 90638
Phone: (562) 404-4474 * Fax: (562) 404-1773
ssdi@ssdi-power.com * www.ssdi-power.com

SFF23N60S1
SFF23N60S2

DESIGNER'S DATA SHEET

21 AMP, 600 Volts, 320 mΩ Avalanche Rated N-channel MOSFET

SMD1, 2



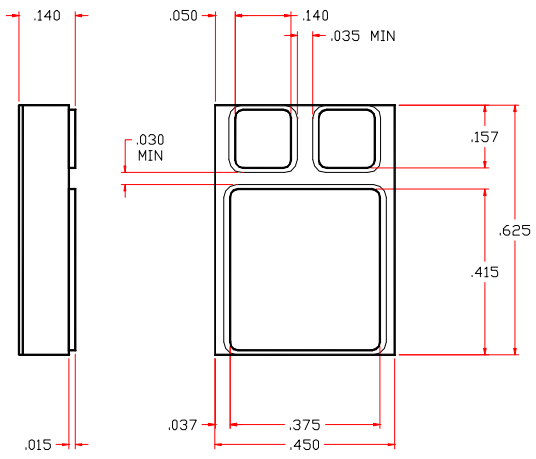
Note
1/ maximum current limited by package configuration

Features:

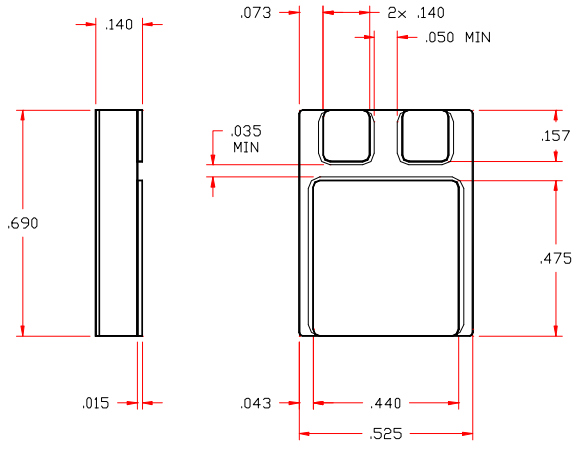
- Rugged poly-Si gate
- Lowest ON-resistance in the industry
- Avalanche rated
- Hermetically Sealed, Hot Case power SMD
- Low Total Gate Charge
- Fast Switching
- TX, TXV, S-Level screening available
- Improved ($R_{DS(ON)}$ Q_G) figure of merit

Maximum Ratings		Symbol	Value	Units
Drain - Source Voltage		V_{DSS}	600	V
Gate – Source Voltage	continuous transient	V_{GS}	±30 ±40	V
Max. Continuous Drain Current (package limited)	@ T_C = 25ºC @ T_C = 125ºC	I_{D1} I_{D2}	21 10	A
Pulsed Drain (Instantaneous) Current (Tj limited)	@ T_C = 25ºC	I_{D3}	30	A
Max. Avalanche current	@ L= 0.1 mH	I_{AR}	30	A
Single / Repetitive Avalanche Energy	@ L= 0.1 mH	E_{AS} / E_{AR}	1500 / 30	mJ
Total Power Dissipation	@ T_C = 25ºC	P_D	300	W
Operating & Storage Temperature		T_{OP} & T_{STG}	-55 to +150	ºC
Maximum Thermal Resistance	Junction to Case	$R_{\theta JC}$	0.42 (typ 0.3)	ºC/W

SMD 1



SMD 2



NOTE: All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.	**DATA SHEET #: FT0029B**	**DOC**

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SFF23N60S1
SFF23N60S2

Electrical Characteristics [4/]		Symbol	Min	Typ	Max	Units
Drain to Source Breakdown Voltage	V_{GS} = 0V, I_D = 250µA	BV_{DSS}	600	620	—	V
Drain to Source On State Resistance	V_{GS} = 10V, I_D = 11.5A, Tj= 25°C	$R_{DS(on)}$	—	300	320	mΩ
	V_{GS} = 10V, I_D = 25A, Tj=25°C		—	300	—	
	V_{GS} =10V, I_D = 11.5A, Tj= 125°C		—	670	—	
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 4mA, Tj= 25°C	$V_{GS(th)}$	2.0	3.5	4.5	V
	V_{DS} = V_{GS}, I_D = 1mA, Tj= 25°C		—	3.4	—	
Gate to Source Leakage	V_{GS} = ±30V, Tj= 25°C	I_{GSS}	—	20	±100	nA
	V_{GS} = ±20V, Tj= 125°C		—	30	—	
Zero Gate Voltage Drain Current	V_{DS} = 600V, V_{GS} = 0V, T_j = 25°C	I_{DSS}	—	0.1	25	µA
	V_{DS} = 480V, V_{GS} = 0V, T_j = 125°C		—	0.085	1	mA
Forward Transconductance	V_{DS} = 10V, I_D = 11.5A, T_j = 25°C	g_{fs}	10	20	—	Mho
Total Gate Charge	V_{GS} = 10V	Q_g	—	100	—	nC
Gate to Source Charge	V_{DS} = 300V	Q_{gs}	—	23	—	
Gate to Drain Charge	I_D = 16.5A	Q_{gd}	—	45	—	
Turn on Delay Time	V_{GS} = 10V	$t_{d(on)}$	—	28	—	nsec
Rise Time	V_{DS} = 300V	t_r	—	33	—	
Turn off Delay Time	I_D = 16.5A	$t_{d(off)}$	—	80	—	
Fall Time	R_G = 2.0Ω, pw= 3us	t_f	—	23	—	
Diode Forward Voltage	I_F = 23A, V_{GS} = 0V	V_{SD}	—	1.0	1.5	V
	I_F = 16.5A, V_{GS} = 0V		—	0.87	—	
Diode Reverse Recovery Time	I_F = 16.5A, di/dt = 100A/usec	t_{rr}	—	210	250	nsec
Peak Reverse Recovery Current		$I_{RM(rec)}$	—	tbd	—	A
Reverse Recovery Charge		Q_{rr}	—	1.3	—	µC
Input Capacitance	V_{GS} = 0V	C_{iss}	—	4100	—	pF
Output Capacitance	V_{DS} = 25V	C_{oss}	—	400	—	
Reverse Transfer Capacitance	f = 1 MHz	C_{rss}	—	120	—	

NOTES:

* Pulse Test: Pulse Width = 300µsec, 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/ Unless Otherwise Specified, All Electrical Characteristics @25°C.

Available Part Numbers:

Consult Factory

PIN ASSIGNMENT (Standard)			
Package	**Drain**	**Source**	**Gate**
SMD1	Pin 1	Pin 2	Pin 3
SMD2	Pin 1	Pin 2	Pin 3