



Solid State Devices, Inc.

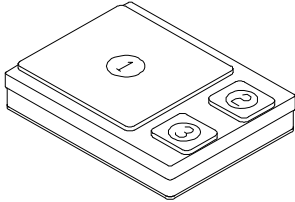
14701 Firestone Blvd * La Mirada, Ca 90638
 Phone: (562) 404-4474 * Fax: (562) 404-1773
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SFF23N60S1 SFF23N60S2

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

DESIGNER'S DATA SHEET

SMD1, 2

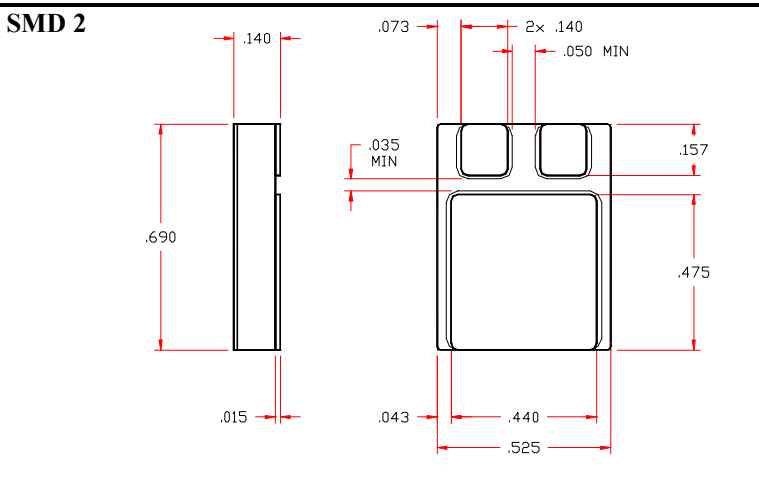
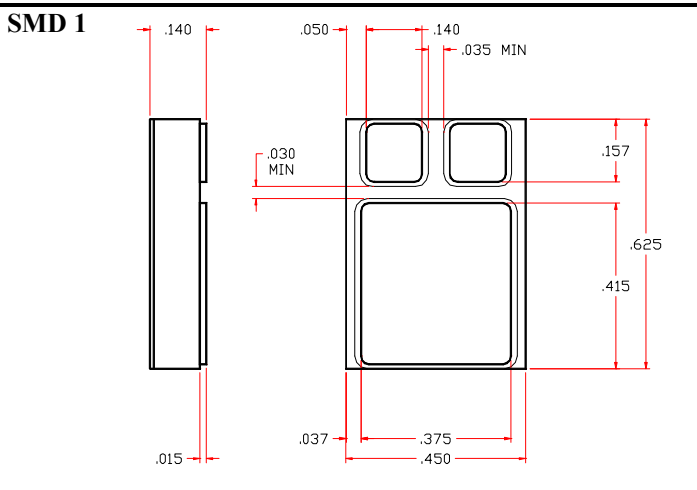


Note
1/ maximum current limited by package configuration

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	V_{GS}	±30 ±40	V
Max. Continuous Drain Current (package limited)	@ $T_C = 25^\circ C$	I_{D1}	21
	@ $T_C = 125^\circ C$	I_{D2}	10
Pulsed Drain (Instantaneous) Current (T_j limited)	@ $T_C = 25^\circ C$	I_{D3}	30
Max. Avalanche current	@ $L = 0.1$ mH	I_{AR}	30
Single / Repetitive Avalanche Energy	@ $L = 0.1$ mH	E_{AS} / E_{AR}	1500 / 30
Total Power Dissipation	@ $T_C = 25^\circ C$	P_D	300
Operating & Storage Temperature		$T_{OP} \& T_{STG}$	-55 to +150
Maximum Thermal Resistance	Junction to Case	$R_{\theta JC}$	0.42 (typ 0.3)



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

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SFF23N60S1

SFF23N60S2

Electrical Characteristics ^{4/}		Symbol	Min	Typ	Max	Units
Drain to Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	600	620	—	V
Drain to Source On State Resistance	$V_{GS} = 10V, I_D = 11.5A, T_j = 25^\circ C$	$R_{DS(on)}$	—	300	320	mΩ
	$V_{GS} = 10V, I_D = 25A, T_j = 25^\circ C$		—	300	—	
	$V_{GS} = 10V, I_D = 11.5A, T_j = 125^\circ C$		—	670	—	
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 4mA, T_j = 25^\circ C$	$V_{GS(th)}$	2.0	3.5	4.5	V
	$V_{DS} = V_{GS}, I_D = 1mA, T_j = 25^\circ C$		—	3.4	—	
Gate to Source Leakage	$V_{GS} = \pm 30V, T_j = 25^\circ C$	I_{GSS}	—	20	±100	nA
	$V_{GS} = \pm 20V, T_j = 125^\circ C$		—	30	—	
Zero Gate Voltage Drain Current	$V_{DS} = 600V, V_{GS} = 0V, T_j = 25^\circ C$	I_{DSS}	—	0.1	25	μA mA
	$V_{DS} = 480V, V_{GS} = 0V, T_j = 125^\circ C$		—	0.085	1	
Forward Transconductance	$V_{DS} = 10V, I_D = 11.5A, T_j = 25^\circ C$	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	$R_G = 2.0\Omega, pw = 3\mu s$	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	$I_F = 16.5A, di/dt = 100A/\mu sec$	t_{rr}	—	210	250	nsec
Peak Reverse Recovery Current		$I_{RM(ree)}$	—	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	$f = 1\text{ MHz}$	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

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