



PRELIMINARY

SOLID STATE DEVICES, INC

14849 Firestone Boulevard · La Mirada, CA 90638  
 Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424

## Designer's Data Sheet

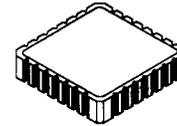
### FEATURES:

- Rugged construction with polysilicon gate
- Low RDS(on) and high transconductance
- Excellent high temperature stability
- Very fast switching speed
- Fast recovery and superior dv/dt performance
- Increased reverse energy capability
- Low input and transfer capacitance for easy paralleling
- Ceramic Seals for improved hermeticity
- Hermetically sealed surface mount package
- TX, TXV and Space Level screening available
- Replaces: IRF220 Types

# SFF220-28

**5 AMP  
 200 VOLTS  
 0.8 Ω  
 N-CHANNEL  
 POWER MOSFET**

28 PIN CLCC



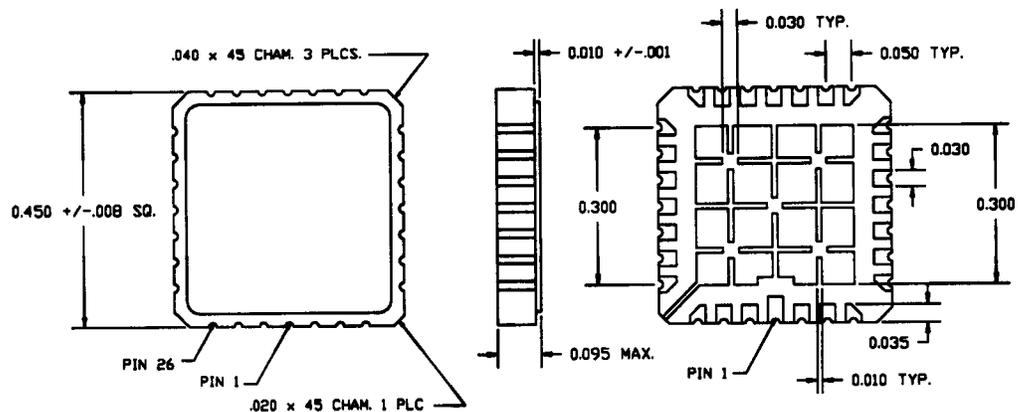
### MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Drain to Source Voltage	V <sub>DS</sub>	200	Volts
Gate to Source Voltage	V <sub>GS</sub>	± 20	Volts
Continuous Drain Current @ TC=25°C Continuous Drain Current @ TA=25°C	I <sub>D</sub>	5.0 0.8	Amps
Operating and Storage Temperature	Top & Tstg	-55 to +150	°C
Thermal Resistance, Junction to Case Thermal Resistance, Junction to Ambient	R <sub>θJC</sub> R <sub>θJA</sub>	10 120	°C/W
Total Device Dissipation @ TC=25°C Total Device Dissipation @ TC=55°C Total Device Dissipation @ TA=25°C	P <sub>D</sub>	12.5 9.5 1.0	Watts

### PACKAGE OUTLINE: 28 PIN CLCC

**PIN OUT:**  
**SOURCE: 1, 15 & 28**  
**DRAIN: 5 & 11**  
**GATE: 2, 3, 13, 14**

**NOTE:**  
 All Drain/Source pins  
 must be connected  
 on the PC Board in  
 order to maximize  
 current capability  
 and minimize RDS(on)



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

DATA SHEET #: F00125 A

MED

<b>ELECTRICAL CHARACTERISTICS @ T<sub>J</sub>=25 °C (Unless Otherwise Specified)</b>						
<b>RATING</b>		<b>SYMBOL</b>	<b>MIN</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
<b>Drain to Source Breakdown Voltage</b> (VGS=0 V, ID=250µA)		<b>BV<sub>DSS</sub></b>	200	230	---	<b>V</b>
<b>Drain to Source on State Resistance</b> (VGS=10 V, ID=60% Rated ID)		<b>R<sub>DS(on)</sub></b>	---	0.7	0.8	<b>Ω</b>
<b>On State Drain Current</b> (VDS > ID(on) X RDS(on) Max, VGS=10 V)		<b>ID(on)</b>	5.0	6.0	---	<b>A</b>
<b>Gate Threshold Voltage</b> (VDS=VGS, ID=250µA)		<b>VGS(th)</b>	2.0	3.3	4.0	<b>V</b>
<b>Forward Transconductance</b> (VDS > ID(on) X RDS(on) Max, IDS=50% rated ID)		<b>g<sub>fs</sub></b>	1.3	2.5	---	<b>S(Ω)</b>
<b>Zero Gate Voltage Drain Current</b> (VDS=max rated voltage, VGS=0 V) (VDS=80% rated VDS, VGS=0 V, TA=125°C)		<b>IDSS</b>	---	---	250 1000	<b>µA</b>
<b>Gate to Source Leakage Forward</b> <b>Gate to Source Leakage Reverse</b>	At rated VGS	<b>I<sub>GSS</sub></b>	---	---	100 -100	<b>nA</b>
<b>Total Gate Charge</b> <b>Gate to Source Charge</b> <b>Gate to Drain Charge</b>	VGS=10 Volts 80% rated VDS Rated ID	<b>Q<sub>g</sub></b> <b>Q<sub>gs</sub></b> <b>Q<sub>gd</sub></b>	---	11 5.0 6.0	15 8 10	<b>nC</b>
<b>Turn on Delay Time</b> <b>Rise Time</b> <b>Turn Off Delay Time</b> <b>Fall Time</b>	VDD=50% rated VDS 50% rated ID RG=50Ω	<b>t<sub>d(on)</sub></b> <b>t<sub>r</sub></b> <b>t<sub>d(off)</sub></b> <b>t<sub>f</sub></b>	---	20 30 50 30	40 60 100 60	<b>nsec</b>
<b>Diode Forward Voltage</b> (IS=rated ID, VGS=0 V, T <sub>J</sub> =25°C)		<b>VSD</b>	---	1.0	2.0	<b>V</b>
<b>Diode Reverse Recovery Time</b> <b>Reverse Recovery Charge</b>	T <sub>J</sub> =25°C IF=rated ID di/dt=100 A/µsec	<b>t<sub>rr</sub></b> <b>Q<sub>RR</sub></b>	---	350 2.3	---	<b>nsec</b> <b>µC</b>
<b>Input Capacitance</b> <b>Output Capacitance</b> <b>Reverse Transfer Capacitance</b>	VGS=0 Volts VDS=25 Volts f= 1 MHz	<b>C<sub>iss</sub></b> <b>C<sub>oss</sub></b> <b>C<sub>rss</sub></b>	---	450 150 40	600 300 80	<b>pF</b>

For thermal derating curves and other characteristic curves please contact SSDI Marketing Department.