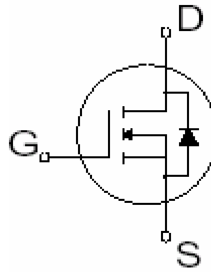
GOOD-ARK

SSFP3N20

StarMOS[T] Power MOSFET

- Extremely high dv/dt capability
- Low Gate Charge Qg results in Simple Drive Requirement
- 100% avalanche tested
- Gate charge minimized
- Very low intrinsic capacitances
- Very good manufacturing repeatability



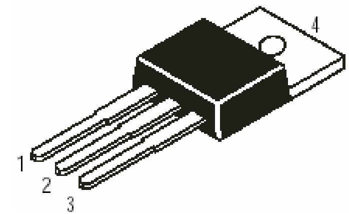
V_{DSS} = 200V

I_{D25} =2.5A

$R_{DS(ON)}$ =1.5 Ω

Description

StarMOS is a new generation of high voltage N–Channel enhancement mode power MOSFETs. This new technology minimises the JFET effect, increases packing density and reduces the on-resistance. StarMOS also achieves faster switching speeds through optimised gate layout with planar stripe DMOS technology.



Pin1–Gate

Pin2–Drain

Pin1–Source

Application

- Switching application

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D@T_C=25˚C	Continuous Drain Current,V_{GS}@10V	2.5	A
I_D@T_C=100˚C	Continuous Drain Current,V_{GS}@10V	1.5	
I_{DM}	Pulsed Drain Current ①	10	
P_D@T_C=25˚C	Power Dissipation	20	W
	Linear Derating Factor	0.34	W/˚C
V_{GS}	Gate-to-Source Voltage	±20	V
E_{AS}	Single Pulse Avalanche Energy ②	44	mJ
I_{AR}	Avalanche Current ①	3.3	A
E_{AR}	Repetitive Avalanche Energy ①	3.8	mJ
dv/dt	Peak Diode Recovery dv/dt ③	5.0	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	﹣25 to +150	℃
	Soldering Temperature, for 10 seconds	300(1.6mm from case)	
	Mounting Torque,6-32 or M3 screw	10 lbf•in(1.1N•m)	

Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
$R_{θJC}$	Junction-to-case	—	—	6.4	℃/W
$R_{θCS}$	Case-to-Sink,Flat,Greased Surface	—	0.5	—	
$R_{θJA}$	Junction-to-Ambient	—	—	80	

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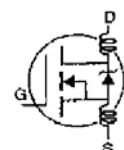
Electrical Characteristics @T_J=25 ℃(unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	200	—	—	V	V_{GS}=0V,I_D=250μA
$\triangle V_{(BR)DSS}/\triangle T_J$	Breakdown Voltage Temp.Coefficient	—	0.27	—	V/℃	Reference to 25℃,I_D=1mA
$R_{DS(on)}$	Static Drain-to-Source On-resistance	—	—	1.5	Ω	V_{GS}=10V,I_D=1.25A
$V_{GS(th)}$	Gate Threshold Voltage	2.0	—	4.0	V	V_{DS}=V_{GS},I_D=250μA
gfs	Forward Transconductance	0.8	—	—	S	V_{DS}=10V,I_D=1.25A
I_{DSS}	Drain-to-Source Leakage current	—	—	25	μA	V_{DS}=Rated V_{DSS},V_{GS}=0V
		—	—	250		V_{DS}=0. 8×Rated V_{DSS}, V_{GS}=0V,T_J=125℃
I_{GSS}	Gate-to-Source Forward leakage	—	—	100	nA	V_{GS}=20V
	Gate-to-Source Reverse leakage	—	—	-100		V_{GS}=-20V
Qg	Total Gate Charge	—	—	7.5	nC	I_D=3.0A V_{DD}=45V
Qgs	Gate-to-Source charge	—	1.2	—		
Qgd	Gate-to-Drain("Miller") charge	—	3.0	—		
td(on)	Turn-on Delay Time	—	—	15	nS	V_{DD}=50V I_D=1.25A V_{GS}=10V R_{GEN}=50Ω R_{GS}=50Ω
tr	Rise Time	—	—	25		
td(off)	Turn-Off Delay Time	—	—	15		
tf	Fall Time	—	—	15		
L_D	Internal Drain Inductance	—	4.5	—	nH	Between lead, 6mm(0.25in.) from package and center of die contact 
L_S	Internal Source Inductance	—	7.5	—		
C_{iss}	Input Capacitance	—	200	—	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz See Figure 5
C_{oss}	Output Capacitance	—	80	—		
C_{rss}	Reverse Transfer Capacitance	—	25	—		

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	3.3	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	8.0		
V_{SD}	Diode Forward Voltage	—	—	2.0	V	T_J=25℃,I_S=2.5A,V_{GS}=0V ④
trr	Reverse Recovery Time	—	290	—	nS	T_J=25℃,I_F=2.5A di/dt=25A/μs ④
Qrr	Reverse Recovery Charge	0.33	0.9	1.4	nC	
ton	Forward Turn-on Time	Intrinsic turn-on time is negligible (turn-on is dominated by L_S + L_D)				

Notes:

① Repetitive rating;pulse width limited by max.junction temperature(see figure 11)

② L =6.4mH, I_{AS} = 3.3 A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

③ I_{SD}≤2.5A,di/dt≤140A/μS,V_{DD}≤$V_{(BR)DSS}$, T_J≤150℃

④ Pulse width≤80μS; duty cycle≤1%