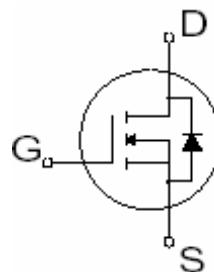


- Extremely high dv/dt capability
- Low Gate Charge Qg results in Simple Drive Requirement
- 100% avalanche tested
- Gate charge minimized
- Very low intrinsic capacitances
- Very good manufacturing repeatability



V_{DSS} = 700V

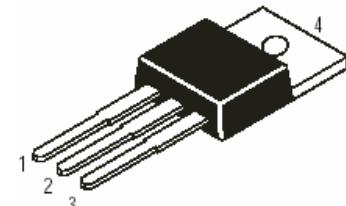
I_{D25} = 7.5A

R_{DSON} = 1.2 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
Pin3-Source

Application

- Switching application

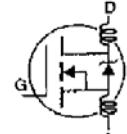
Absolute Maximum Ratings

	Parameter	Max.	Units
I _D @T _c =25°C	Continuous Drain Current,V _{GS} @10V	7.5	A
I _D @T _c =100°C	Continuous Drain Current,V _{GS} @10V	4.7	
I _{DM}	Pulsed Drain Current ①	30	
P _D @T _c =25°C	Power Dissipation	115	W
	Linear Derating Factor	0.92	W/°C
V _{GS}	Gate-to-Source Voltage	±30	V
E _{AS}	Single Pulse Avalanche Energy ②	230	mJ
I _{AR}	Avalanche Current ①	7.5	A
E _{AR}	Repetitive Avalanche Energy ①	15.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③	4.5	V/ns
T _J	Operating Junction and Storage Temperature Range	- 55 to +175	
T _{STG}	Soldering Temperature, for 10 seconds	300(1.6mm from case)	
	Mounting Torque,6-32 or M3 screw	10 lbf.in(1.1N.m)	

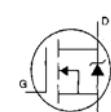
Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
R _{θJC}	Junction-to-case	—	—	1.09	C/W
R _{θCS}	Case-to-Sink,Flat,Greased Surface	—	—	0.50	
R _{θJA}	Junction-to-Ambient	—	—	62.5	

Electrical Characteristics @TJ=25°C(unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	700	—	—	V	V _{GS} =0V, I _D =250μA
△V _{(BR)DSS} /△T _J	Breakdown Voltage Temp.Coefficient	—	0.78	—	V/C	Reference to 25°C, I _D =1mA
R _{D(on)}	Static Drain-to-Source On-resistance	—	1.0	1.2	Ω	V _{GS} =10V, I _D =4A ④
V _{GS(th)}	Gate Threshold Voltage	3.0	—	4.5	V	V _{DS} =V _{GS} , I _D =250μA
g _{fs}	Forward Transconductance	—	5.3	—	S	V _{DS} =15V, I _D =4A
I _{DSS}	Drain-to-Source Leakage current	—	—	1	μ A	V _{DS} =700V, V _{GS} =0V
		—	—	50		V _{DS} =700V, V _{GS} =0V, T _J =150°C
I _{GSS}	Gate-to-Source Forward leakage	—	—	100	nA	V _{GS} =30V
	Gate-to-Source Reverse leakage	—	—	-100		V _{GS} =-30V
Q _g	Total Gate Charge	—	48	68	nC	I _D =8A
Q _{gs}	Gate-to-Source charge	—	10	—		V _{DS} =560V
Q _{gd}	Gate-to-Drain("Miller") charge	—	27	—		V _{GS} =10V
t _{d(on)}	Turn-on Delay Time	—	45	—	nS	V _{DD} =350V
t _r	Rise Time	—	14	—		I _D =4A
t _{d(off)}	Turn-Off Delay Time	—	11	—		R _G =4.7Ω
t _f	Fall Time	—	7	—		V _{GS} =10V
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	—	1370	—	pF	V _{GS} =0V
C _{oss}	Output Capacitance	—	143	—		V _{DS} =25V
C _{rss}	Reverse Transfer Capacitance	—	32	—		f=1.0MHz

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I _s	Continuous Source Current (Body Diode)	—	—	7.5	A	MOSFET symbol showing the integral reverse p-n junction diode.
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	30		
V _{SD}	Diode Forward Voltage	—	—	1.6	V	T _J =25°C, I _s =7.5A, V _{GS} =0V ④
t _{rr}	Reverse Recovery Time	—	570	—	nS	T _J =25°C, I _F =8A di/dt=100A/μs ④
Q _{rr}	Reverse Recovery Charge	—	5.2	—	nC	
t _{on}	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 = 54mH, IAS = 7.5A, VDD = 50V, RG = 25Ω, Starting TJ = 25°C

③ I_{SD}≤7.5A,di/dt≤200A/ μ S,V_{DD}≤V_{(BR)DSS}, TJ≤25°C

④ Pulse width≤300 μ S; duty cycle≤1.5%