

30V N-Channel MOSFETs

General Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

BV_{DSS}	$R_{DS(ON)Max.}$	I_D
30V	15m Ω	11.6A

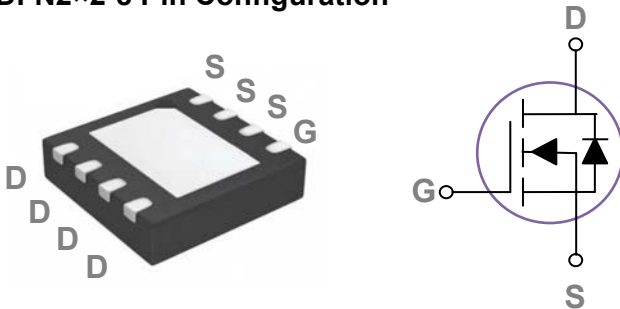
Features

- 30V, 11.6A, $R_{DS(ON)Max.} = 15m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR

DFN2×2-8 Pin Configuration



Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_C=25^\circ\text{C}$)	11.6	A
	Drain Current – Continuous ($T_C=100^\circ\text{C}$)	7.3	A
I_{DM}	Drain Current – Pulsed ¹	80	A
E_{AS}	Single Pulse Avalanche Energy ²	13	mJ
I_{AS}	Single Pulse Avalanche Current ²	16	A
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	2	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Note 1: Exceed these limits to damage to the device.

Note 2: Exposure to absolute maximum rating conditions may affect device reliability.

Electrical Characteristics (T_J=25 °C, unless otherwise noted)
Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	30			V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V , V _{GS} =0V , T _J =25°C			1	uA
		V _{DS} =30V , V _{GS} =0V , T _J =125°C			10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V , V _{DS} =0V			± 100	nA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance ³	V _{GS} =10V , I _D =15A		12	15	mΩ
		V _{GS} =4.5V , I _D =10A		17	21	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	1.5	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			-4		mV/°C
gfs	Forward Transconductance	V _{DS} =5V , I _D =6A		25		S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{3, 4}	V _{DS} =15V , V _{GS} =4.5V , I _D =5A		8.5		nC
Q _{gs}	Gate-Source Charge ^{3, 4}			2.8		
Q _{gd}	Gate-Drain Charge ^{3, 4}			3.6		
T _{d(on)}	Turn-On Delay Time ^{3, 4}	V _{DD} =15V , V _{GS} =10V , R _G =6Ω I _D =1A		4.5		ns
T _r	Rise Time ^{3, 4}			12		
T _{d(off)}	Turn-Off Delay Time ^{3, 4}			26		
T _f	Fall Time ^{3, 4}			8		
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , F=1MHz		744		pF
C _{oss}	Output Capacitance			102		
C _{rss}	Reverse Transfer Capacitance			72		
R _g	Gate resistance	V _{GS} =0V , V _{DS} =0V , f=1MHz		2.8		Ω

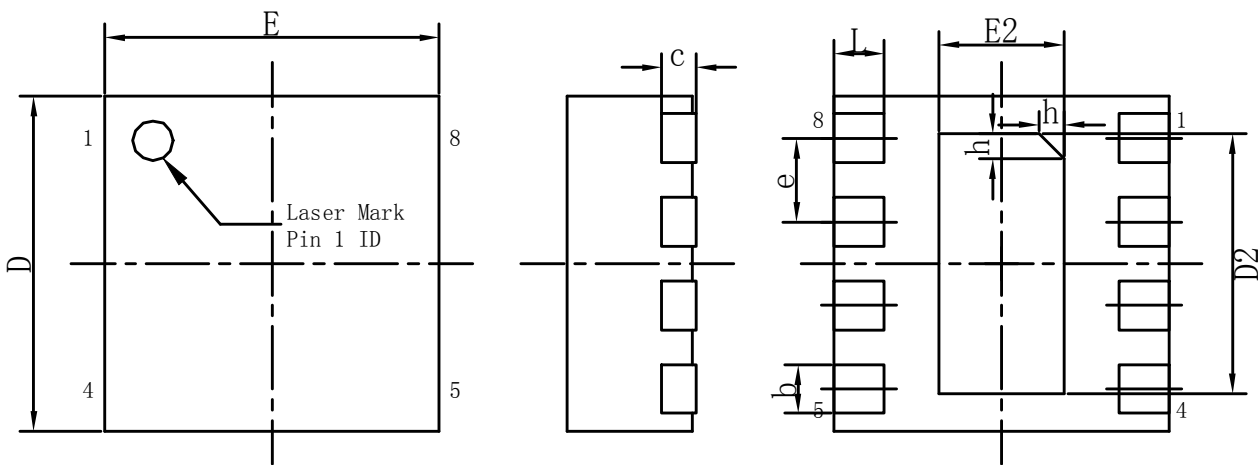
Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current			11.6	A
I _{SM}	Pulsed Source Current ³				23	A
V _{SD}	Diode Forward Voltage ³	V _{GS} =0V , I _S =1A , T _J =25°C			1	V

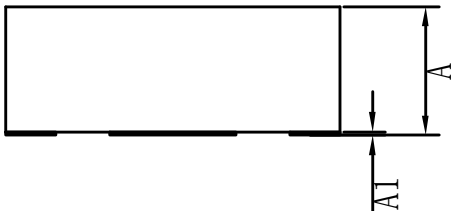
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=16A, R_G=25Ω, Starting T_J=25°C.
3. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

DFN2×2-8 PACKAGE INFORMATION



bottom view



标注	尺寸	最小 (mm)	标准 (mm)	最大 (mm)	标注	尺寸	最小 (mm)	标准 (mm)	最大 (mm)
A		0.70	0.75	0.80	e		0.50BSC		
A1		0.00	0.02	0.05	E		1.95	2.00	2.05
b		0.18	0.29	0.30	E2		0.70	0.75	0.80
c		0.20REF			L		0.25	0.30	0.35
D		1.95	2.00	2.05	h		0.10	0.15	0.20
D2		1.50	1.55	1.60			L/F载体尺寸 (mm) : 1.00*1.80		