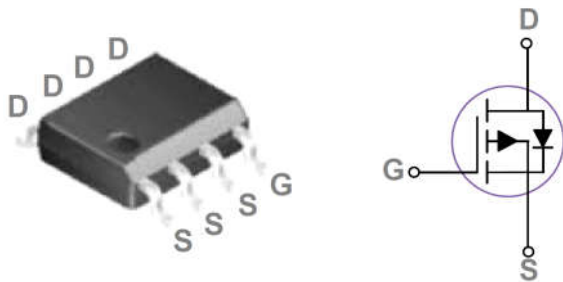


30V P-Channel MOSFETs

General Description

These P-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.

SOP-8 Pin Configuration



Product Summary

BV_{DSS}	$R_{DS(ON)}$ Typ.	I_D
-30 V	17 m Ω	-13 A

Features

- -30 V, -13 A, $R_{DS(ON)}$ Typ. = 17 m Ω @ $V_{GS} = -4.5$ V
- Fast switching
- Green Device Available
- Suit for -4.5 V Gate Drive Applications

Applications

- MB / VGA / Vcore
- POL Applications
- Load Switch
- LED applications

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	± 12	V
I_D	Drain Current – Continuous ($T_C = 25^\circ\text{C}$)	-13	A
	Drain Current – Continuous ($T_C = 100^\circ\text{C}$)	-8	A
I_{DM}	Drain Current – Pulsed ¹	-52	A
P_D	Power Dissipation ($T_C = 25^\circ\text{C}$)	2.5	W
	Power Dissipation – Derate above 25°C	0.02	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient		50	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case		5.4	$^\circ\text{C}/\text{W}$

Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}$, $I_D = -250\ \mu\text{A}$	-30			V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D = -1\ \text{mA}$		-0.03		V/C
I_{DSS}	Drain-Source Leakage Current	$V_{DS} = -30\ \text{V}$, $V_{GS} = 0\ \text{V}$, $T_J = 25^\circ\text{C}$			-1	μA
		$V_{DS} = -24\ \text{V}$, $V_{GS} = 0\ \text{V}$, $T_J = 85^\circ\text{C}$			-10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 12\ \text{V}$, $V_{DS} = 0\ \text{V}$			± 100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS} = -4.5\ \text{V}$, $I_D = -6\ \text{A}$		17	20	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}$, $I_D = -250\ \mu\text{A}$	-1.0	-1.5	-2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		4			mV/ $^\circ\text{C}$
gfs	Forward Transconductance	$V_{DS} = -10\ \text{V}$, $I_D = -8\ \text{A}$		10.5		S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge ^{2,3}	$V_{DS} = -15\ \text{V}$, $V_{GS} = -4.5\ \text{V}$, $I_D = -8\ \text{A}$		14.6		nC
Q_{gs}	Gate-Source Charge ^{2,3}		4.1			
Q_{gd}	Gate-Drain Charge ^{2,3}		6.3			
$T_{d(on)}$	Turn-On Delay Time ^{2,3}	$V_{DD} = -15\ \text{V}$, $V_{GS} = -4.5\ \text{V}$, $R_G = 6\ \Omega$, $I_D = -1\ \text{A}$		9		nS
T_r	Rise Time ^{2,3}		21.8			
$T_{d(off)}$	Turn-Off Delay Time ^{2,3}		59.8			
T_f	Fall Time ^{2,3}		14.4			
C_{iss}	Input Capacitance	$V_{DS} = -15\ \text{V}$, $V_{GS} = 0\ \text{V}$, $F = 1\ \text{MHz}$		1730		pF
C_{oss}	Output Capacitance		180			
C_{rss}	Reverse Transfer Capacitance		125			

Drain-Source Diode Characteristics and Maximum Ratings

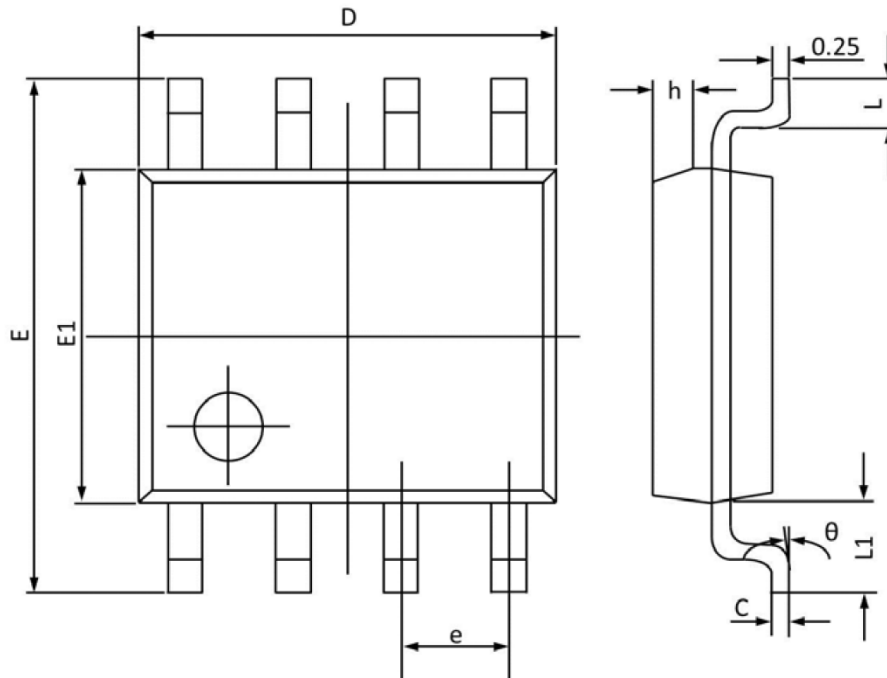
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G = V_D = 0\ \text{V}$, Force Current			-13	A
I_{SM}	Pulsed Source Current				-26	A
V_{SD}	Diode Forward Voltage	$V_{GS} = 0\ \text{V}$, $I_S = 1\ \text{A}$, $T_J = 25^\circ\text{C}$			-1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Package Information

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.150	0.900	0.045	0.035
A1	0.100	0.000	0.004	0.000
A2	1.050	0.900	0.041	0.035
b	0.500	0.300	0.020	0.012
c	0.150	0.080	0.006	0.003
D	3.000	2.800	0.118	0.110
E	1.400	1.200	0.055	0.047
E1	2.550	2.250	0.100	0.089
e	0.95 TYP.		0.037 TYP.	
e1	2.000	1.800	0.079	0.071
L	0.55 REF.		0.022 REF.	
L1	0.500	0.300	0.020	0.012
L2	0.25 TYP.		0.01 TYP.	
θ	8°	0°	8°	0°

V 1.0