S30N04PPB

30V N-Channel MOSFETs

General Description

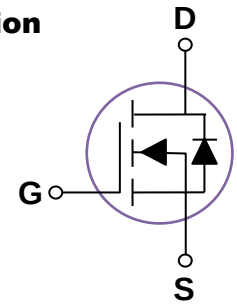
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BV_{DSS}	$R_{DS(ON)}$Max.	I_D
30V	3.8mΩ	110A

Features

- *30V,110A, $R_{DS(ON)}$Max. =3.8mΩ@V_{GS} = 10V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*

PPAK5x6 Pin Configuration



Applications

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

Absolute Maximum Ratings **Tc=25℃ 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℃)	110	A
	Drain Current – Continuous (T_C=100℃)	70	A
I_{DM}	Drain Current – Pulsed[1]	440	A
E_{AS}	Single Pulse Avalanche Energy[2]	125	mJ
I_{AS}	Single Pulse Avalanche Current[2]	50	A
P_D	Power Dissipation (T_C=25℃)	142	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Note 1: Exceed these limits to damage to the device.
Note 2: Exposure to absolute maximum rating conditions may affect device reliability.

CAUTION: These devices are sensitive to electrostatic discharge; follow proper IC Handling Procedures.
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Electrical Characteristics (T_J=25 ℃, unless otherwise noted)
Static State 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℃			1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=125℃			10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V			±100	nA
$R_{DS(ON)}$	Static Drain-Source On-Resistance[3]	V_{GS}=10V , I_D=50A		2.9	3.8	mΩ
		V_{GS}=4.5V , I_D=30A		4.3	5.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	1.6	2.5	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			-4		mV/℃
gfs	Forward Transconductance	V_{DS}=5V , I_D=20A		83		S

Dynamic Characteristics

Q_g	Total Gate Charge[3,4]	V_{DS}=15V , V_{GS}=4.5V , I_D=24A		24		nC
Q_{gs}	Gate-Source Charge[3,4]			4.2		
Q_{gd}	Gate-Drain Charge[3,4]			13		
$T_{d(on)}$	Turn-On Delay Time[3,4]	V_{DD}=15V , V_{GS}=10V , R_G=3.3Ω I_D=15A		12.6		ns
T_r	Rise Time[3,4]			19.5		
$T_{d(off)}$	Turn-Off Delay Time[3,4]			42.8		
T_f	Fall Time[3,4]			13.2		
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , F=1MHz		2200		pF
C_{oss}	Output Capacitance			280		
C_{rss}	Reverse Transfer Capacitance			177		
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz		2		Ω

Drain-Source Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current			110	A
I_{SM}	Pulsed Source Current[3]				220	A
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V , I_S=1A , T_J=25℃			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}=50A.,R_G=25Ω,Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2% .
4. Essentially independent of operating temperature.

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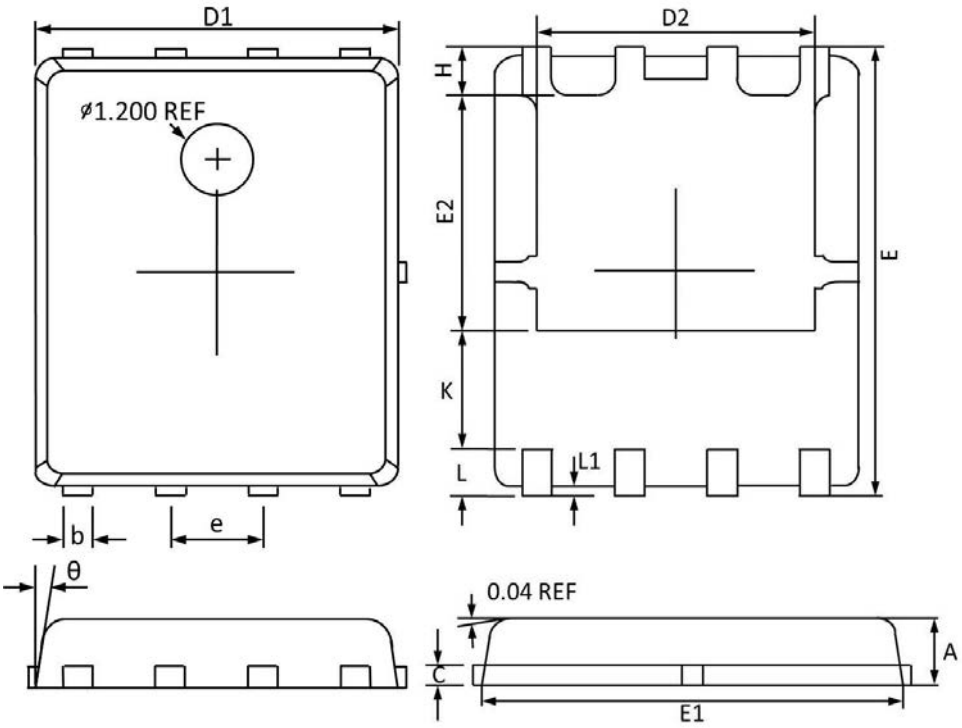
PPAK5x6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.100	4.800	0.201	0.189
D2	4.100	3.610	0.161	0.142
E	6.200	5.900	0.244	0.232
E1	5.900	5.700	0.232	0.224
E2	3.780	3.350	0.149	0.132
e	1.27BSC		0.05BSC	
H	0.700	0.410	0.028	0.016
K	1.500	1.100	0.059	0.043
L	0.710	0.510	0.028	0.020
L1	0.200	0.060	0.008	0.002
θ	12°	0°	12°	0°

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