65V N-Channel MOSFETs

General Description

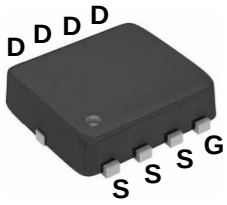
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

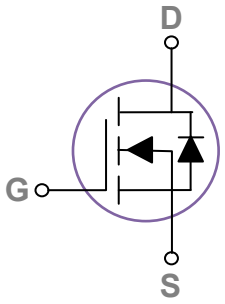
BV_{DSS}	$R_{DS(ON)}$Max.	I_D
65V	16mΩ	38A

Features

- *65V,38A,$R_{DS(ON)}$Max. =16mΩ@V_{GS} = 10V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*

PPAK3×3 Pin Configuration





Applications

- *Motor Drive*
- *Power Tools*
- *LED Lighting*

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	65V	V
V_{GS}	Gate-Source Voltage	+20/-20V	V
I_D	Drain Current – Continuous (T_C=25˚C)	38	A
	Drain Current – Continuous (T_C=100˚C)	24	A
I_{DM}	Drain Current – Pulsed[1]	152	A
E_{AS}	Single Pulse Avalanche Energy[2]	42	mJ
I_{AS}	Single Pulse Avalanche Current[2]	29	A
P_D	Power Dissipation (T_C=25˚C)	63	W
T_{STG}	Storage Temperature Range	-50 to 150	˚C
T_J	Operating Junction Temperature Range	-50 to 150	˚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 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	65			V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V , V_{GS}=0V , T_J=25℃			1	uA
		V_{DS}=48V , V_{GS}=0V , T_J=85℃			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	V_{GS}=10V , I_D=12A		12.6	16	mΩ
		V_{GS}=4.5V , I_D=5A		25	33	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	1.8	2.5	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			-5		mV/℃
gfs	Forward Transconductance	V_{DS}=5V , I_D=13A		38		S

Dynamic and switching Characteristics

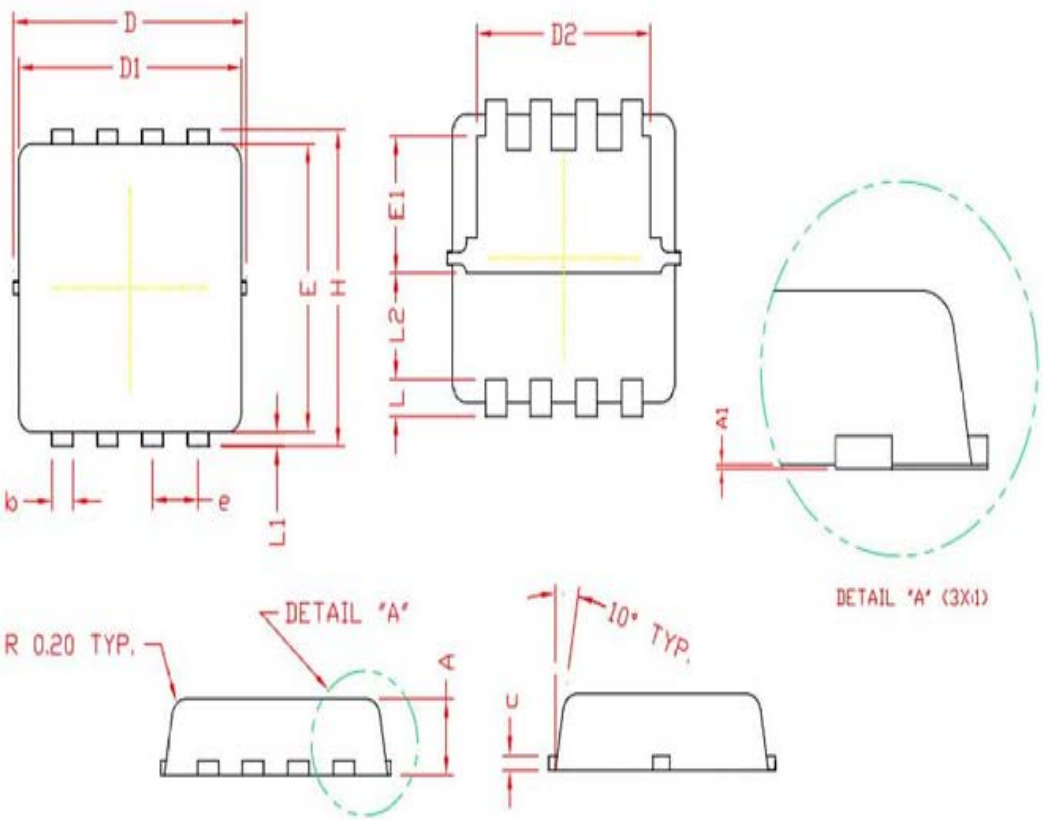
Q_g	Total Gate Charge[2,3]	V_{DS}=30V , V_{GS}=10V , I_D=15A		14		nC
Q_{gs}	Gate-Source Charge[2,3]			3.5		
Q_{gd}	Gate-Drain Charge[2,3]			4.5		
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=30V , V_{GS}=10V , R_G=6Ω I_D=1A		7.2		ns
T_r	Rise Time[2,3]			9		
$T_{d(off)}$	Turn-Off Delay Time[2,3]			17		
T_f	Fall Time[2,3]			6		
C_{iss}	Input Capacitance	V_{DS}=20V , V_{GS}=0V , F=1MHz		810		pF
C_{oss}	Output Capacitance			175		
C_{rss}	Reverse Transfer Capacitance			35		
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz		2.2		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			38	A
I_{SM}	Pulsed Source Current				76	A
V_{SD}	Diode Forward Voltage	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}=29A.,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.

PPAK3×3 PACKAGE INFORMATION



COMMON DIMENSIONS

(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.70	0.80	0.90
A1	0.00	0.03	0.05
b	0.24	0.30	0.35
c	0.10	0.15	0.20
D	3.25	3.32	3.40
D1	3.05	3.15	3.25
D2	2.40	2.50	2.60
E	3.00	3.10	3.20
E1	1.35	1.45	1.55
e	0.65 BSC.		
H	3.20	3.30	3.40
L	0.30	0.40	0.50
L1	0.10	0.15	0.20
L2	1.13 REF.		