



60V P-Channel MOSFETs

General Description

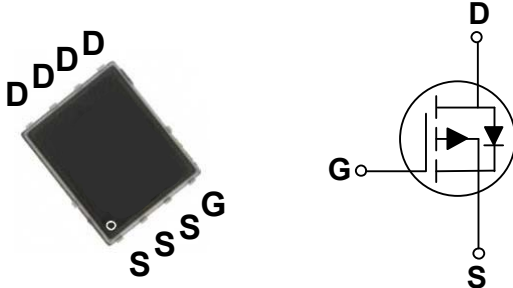
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BV_{DSS}	R_{DS(ON)}	I_D
-60 V	40 mΩ	-28.8 A

Features

- $R_{DS(ON)} \leq 40m\Omega @ V_{GS} = -10V$
- Fast Switching
- Green Device Available
- Reliable and Rugged

PPAK5X6 Pin Configuration



Applications

- DC/DC Converter
- Power Management
- Load Switch

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous ($T_C=25^\circ C$)	-28.8	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	-70.8	A
EAS	Single Pulse Avalanche Energy	31	mJ
IAS	Single Pulse Avalanche Current	-25	A
P_D	Power Dissipation ($T_C=25^\circ C$)	62.5	W
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
Marking Code		PG040	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	80	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	2	$^\circ C/W$



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	-60	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} = -48V, V _{GS} =0V	---	---	-1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V, V _{DS} =0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = -10V, I _D = -8A	---	---	40	mΩ
		V _{GS} = -4.5V, I _D = -5A	---	---	50	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D = -250uA	-1.0	---	-2.5	V
g _{fs}	Forward Transconductance	V _{DS} = -10V, I _D = -4A	---	12	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge	V _{DS} = -30V, V _{GS} = -10V, I _D = -8A	---	52.6	---	nC
Q _{gs}	Gate-Source Charge		---	9	---	
Q _{gd}	Gate-Drain Charge		---	7	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} = -30V, V _{GS} = -10V, R _{GEN} = 6Ω, I _D = -1A	---	9.2	---	nS
T _r	Rise Time		---	22	---	
T _{d(off)}	Turn-Off Delay Time		---	85.4	---	
T _f	Fall Time		---	25.6	---	
C _{iss}	Input Capacitance	V _{DS} = -30V, V _{GS} = 0V, F= 1MHz	---	2460	---	pF
C _{oss}	Output Capacitance		---	112	---	
C _{rss}	Reverse Transfer Capacitance		---	77	---	
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, F= 1MHz	---	3.35	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G = V _D = 0V, Force Current	---	---	-30	A
V _{SD}	Diode Forward Voltage	V _{GS} = 0V, I _S = -1A	---	---	-1.1	V

NOTES :

1. Max. current is limited by junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Guaranteed by design, not subject to production testing.



Characteristics Curves

FIG. 1-Drain Current

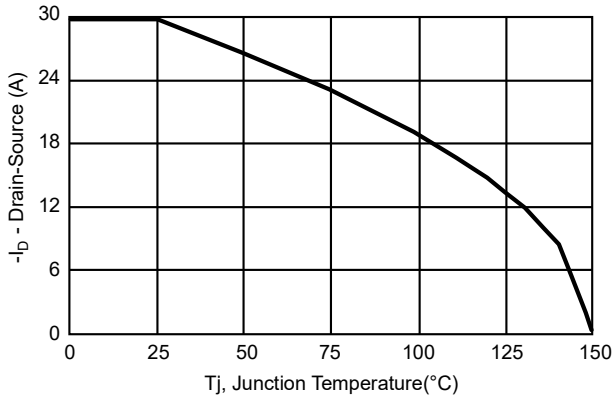


FIG. 2-On-Resistance vs. I_D

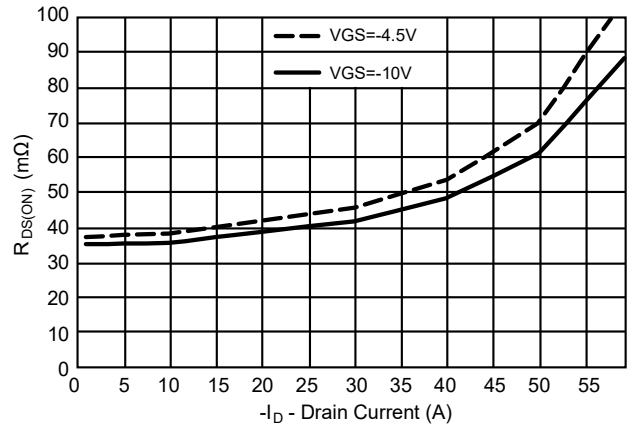


FIG. 3-Gate Threshold Voltage

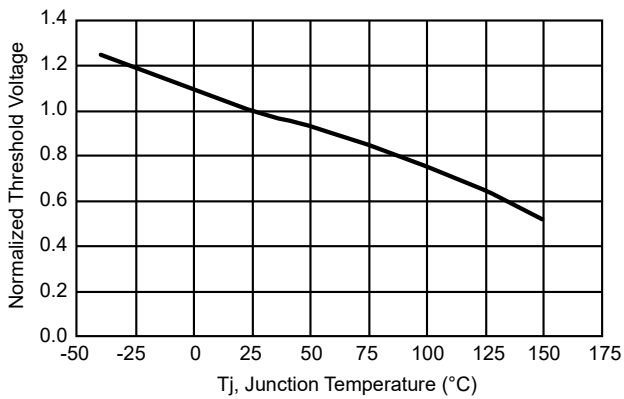


FIG. 4-Gate Charge Characteristics

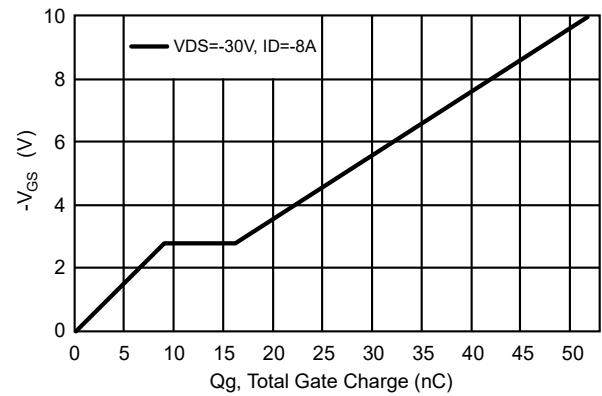


FIG. 5-Safe Operating Area

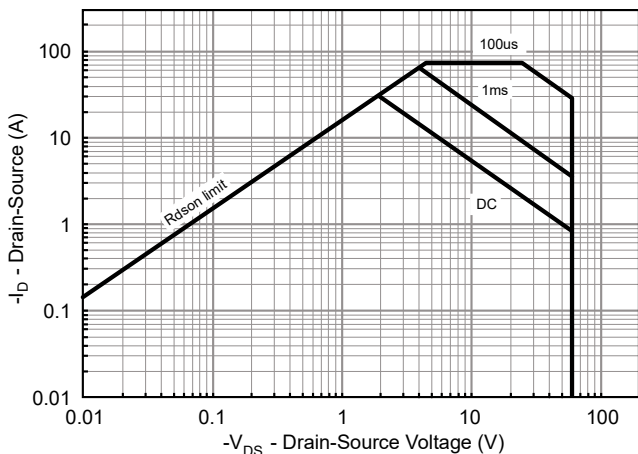
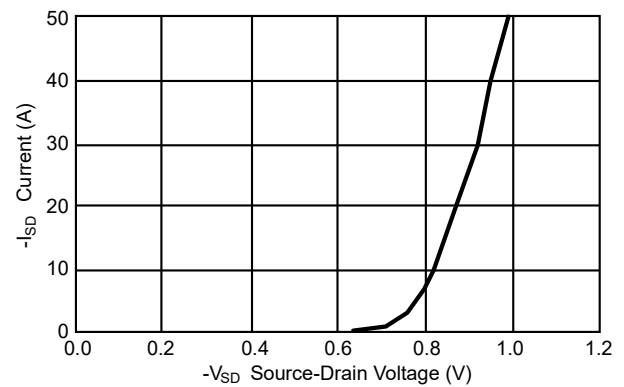
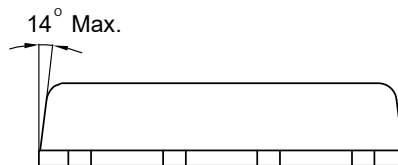
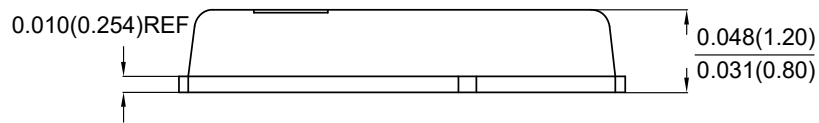
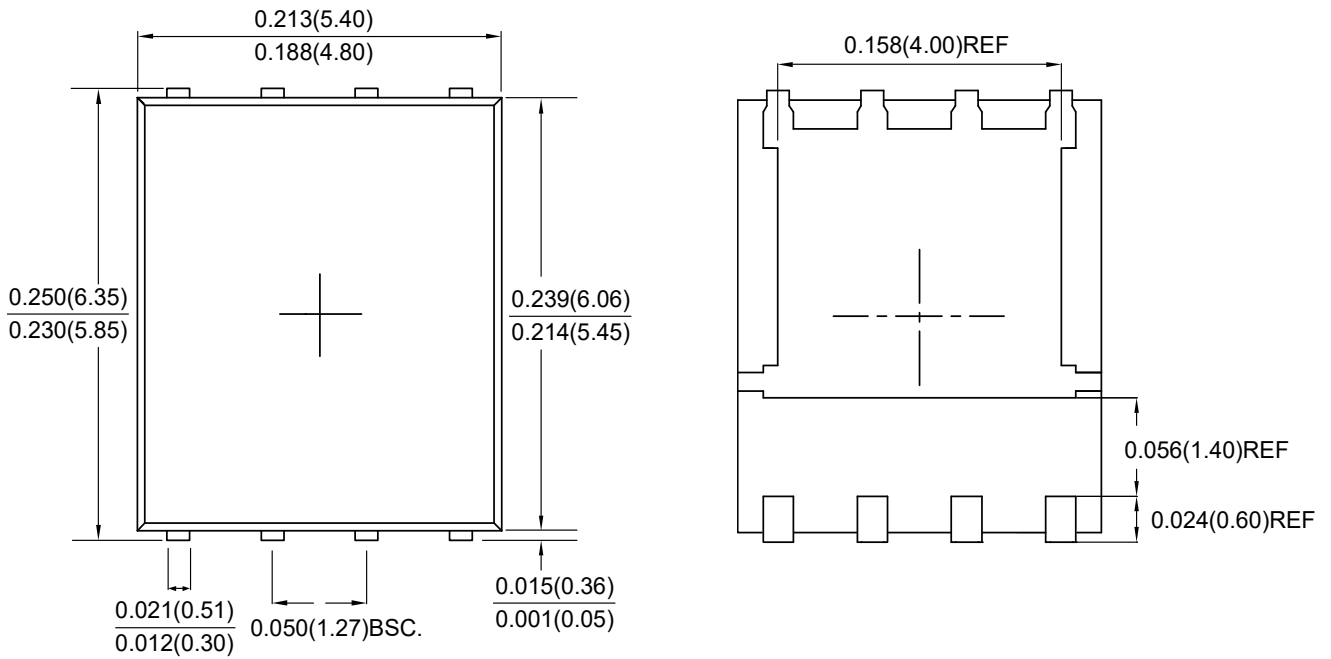


FIG. 6- Source-Drain Forward Voltage





Package Outline Dimensions



PPAK5X6

Dimensions in inches and (millimeters)



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