



100V N+P Dual Channel MOSFETs

General Description

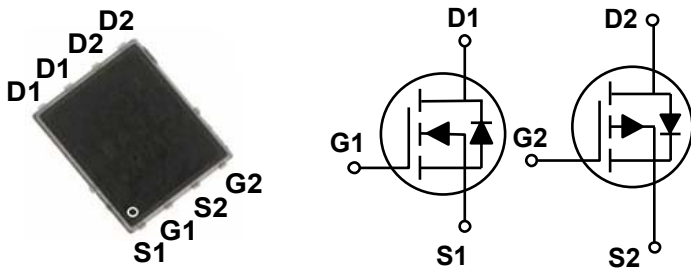
These N+P dual Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.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

BV_{DSS}	R_{DS(ON)}	I_D
100 V	75 mΩ	8 A
-100 V	210 mΩ	-6.5 A

Features

- Fast switching
- Green Device Available
- Suit for 4.5V Gate Drive Applications

PPAK5X6 Dual Pin Configuration



Applications

- Battery Protection
- Load switch
- Uninterruptible Power Supply

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Rating		Units
V _{DS}	Drain-Source Voltage	100	-100	V
V _{GS}	Gate-Source Voltage	±20	±20	V
I _D	Drain Current - Continuous (T _C =25°C)	8	-6.5	A
I _{DM}	Drain Current - Pulsed (NOTE 1)	32	-26	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	4.2	3.8	mJ
P _D	Power Dissipation (T _A =25°C)	2		W
T _J	Operating Junction Temperature Range	-55 to 150		°C
T _{STG}	Storage Temperature Range	-55 to 150		°C
Marking Code		BM075		

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJA}	Thermal Resistance Junction to Ambient	62	°C/W

**100V N+P Dual Channel MOSFETs****N Channel 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	100	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, 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 =5A	---	---	75	mΩ
		V _{GS} =4.5V, I _D =3A	---	---	300	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	---	3.0	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _D =5A	---	7.6	---	nC
Q _{gs}	Gate-Source Charge		---	1.4	---	
Q _{gd}	Gate-Drain Charge		---	2.4	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =50V, V _{GS} =10V, R _G =2Ω, I _D =5A	---	15.6	---	nS
T _r	Rise Time		---	4.2	---	
T _{d(off)}	Turn-Off Delay Time		---	26.8	---	
T _f	Fall Time		---	3.6	---	
C _{ISS}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, F=1MHz	---	429.4	---	pF
C _{OSS}	Output Capacitance		---	58.3	---	
C _{rSS}	Reverse Transfer Capacitance		---	2.9	---	

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	---	---	8	A
I _{SM}	Pulsed Source Current		---	---	24	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =7A	---	---	1.3	V

NOTES :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=50V, R_G=50Ω, L=0.3mH, starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.



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Characteristics Curves

FIG. 1-Transfer Characteristics

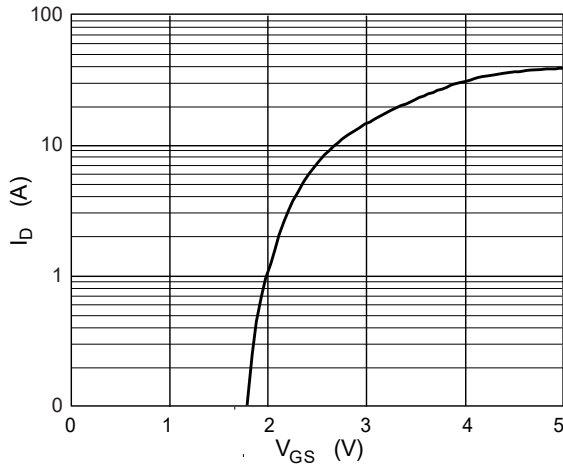


FIG. 2- BV_{DSS} vs T_J

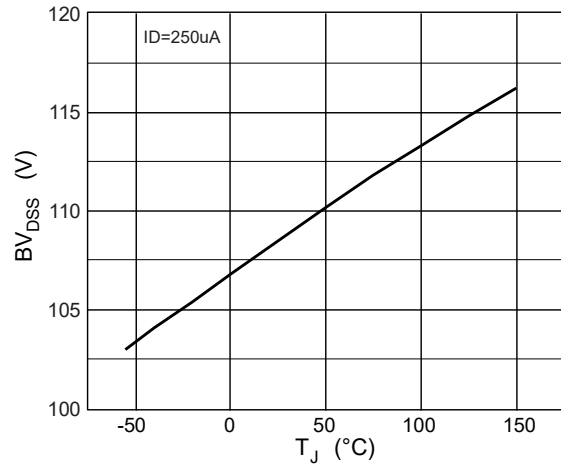


FIG. 3- V_{th} vs T_J

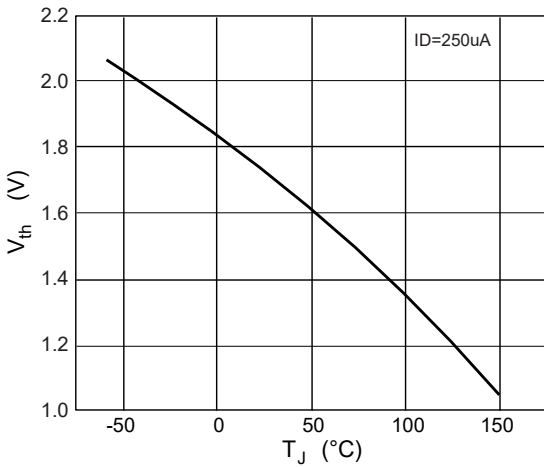


FIG. 4- $R_{DS(ON)}$ vs T_J

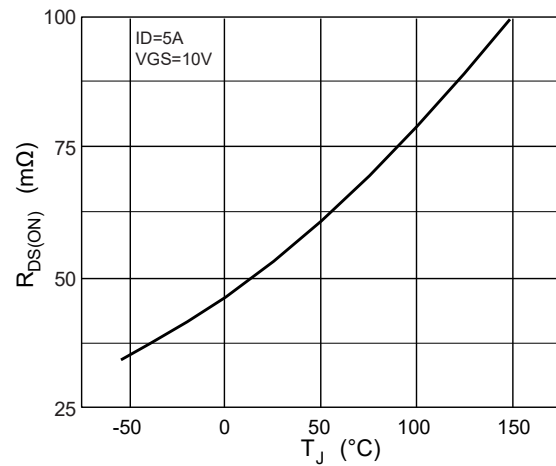


FIG. 5- I_S vs V_{SD}

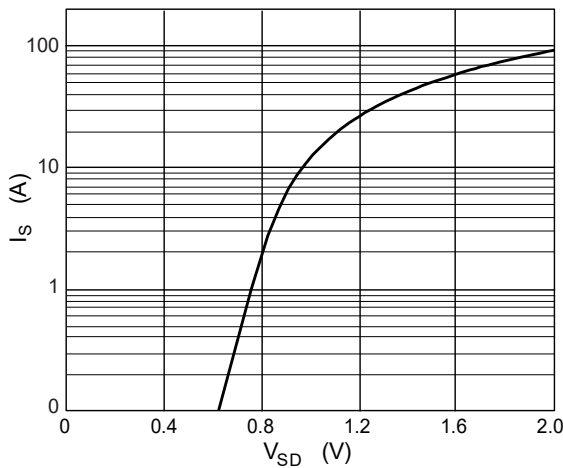
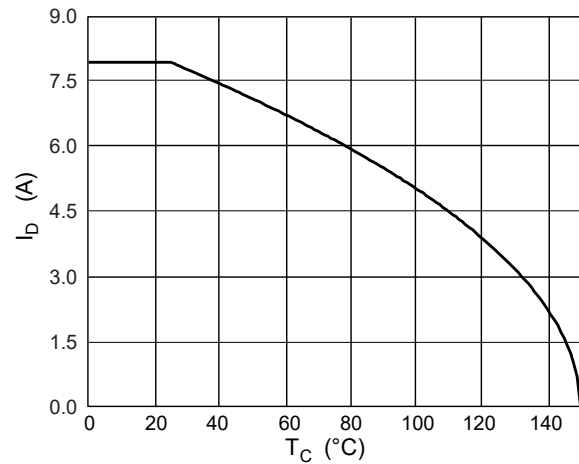


FIG. 6- I_D vs T_C





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P Channel 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	-100	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} = -100V , 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 = -5A	---	---	210	mΩ
		V _{GS} = -4.5V , I _D = -2A	---	---	230	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D = -250uA	-1.0	---	-3.0	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge	V _{DS} = -80V , V _{GS} = -10V , I _D = -5A	---	20	---	nC
Q _{gs}	Gate-Source Charge		---	3.5	---	
Q _{gd}	Gate-Drain Charge		---	4.6	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} = -50V , V _{GS} = -10V , R _{GEN} = 25Ω , I _D = -5A	---	18	---	nS
T _r	Rise Time		---	8	---	
T _{d(off)}	Turn-Off Delay Time		---	100	---	
T _f	Fall Time		---	30	---	
C _{ISS}	Input Capacitance	V _{DS} = -25V , V _{GS} = 0V , F= 1MHz	---	1419	---	pF
C _{OSS}	Output Capacitance		---	89	---	
C _{rSS}	Reverse Transfer Capacitance		---	45	---	

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	---	---	-6.5	A
I _{SM}	Pulsed Source Current		---	---	-19.5	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S = -1A	---	---	-1.2	V

NOTES :

5. Repetitive Rating : Pulsed width limited by maximum junction temperature.
6. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
7. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.



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Characteristics Curves

FIG. 7-Transfer Characteristics

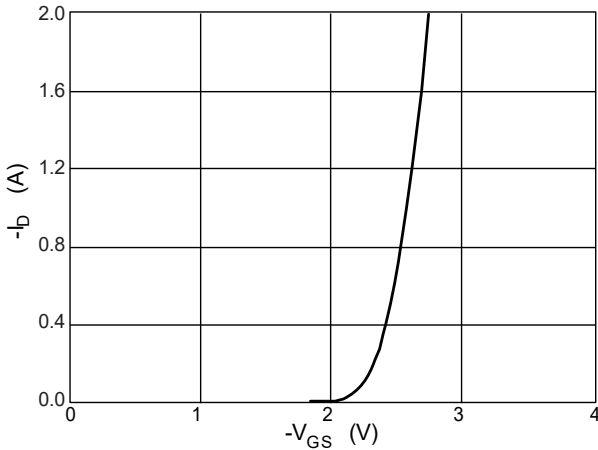


FIG. 8- $R_{DS(ON)}$ vs I_D

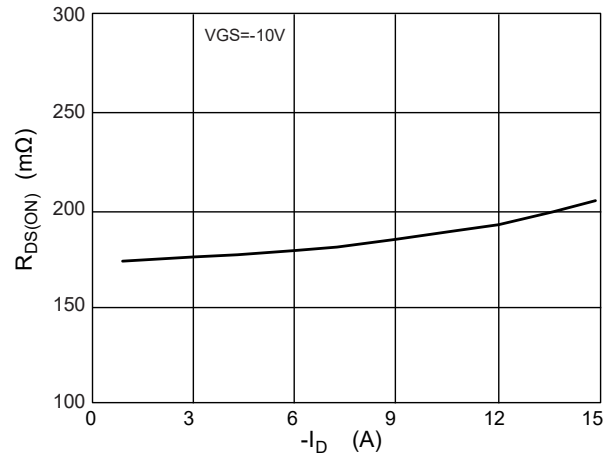


FIG. 9- I_D vs T_C

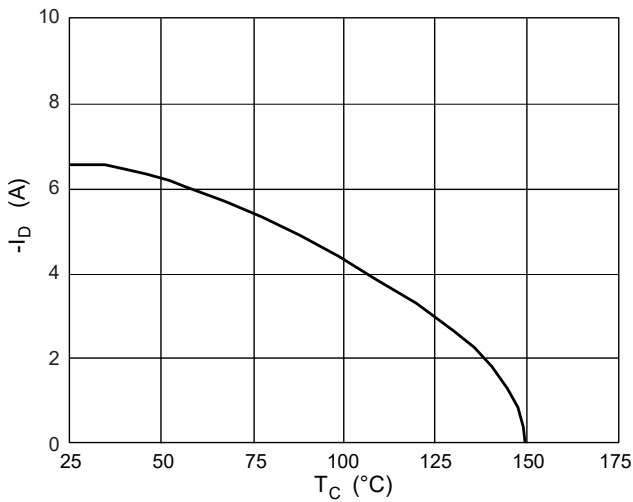


FIG. 10-Normalized $R_{DS(ON)}$ vs T_J

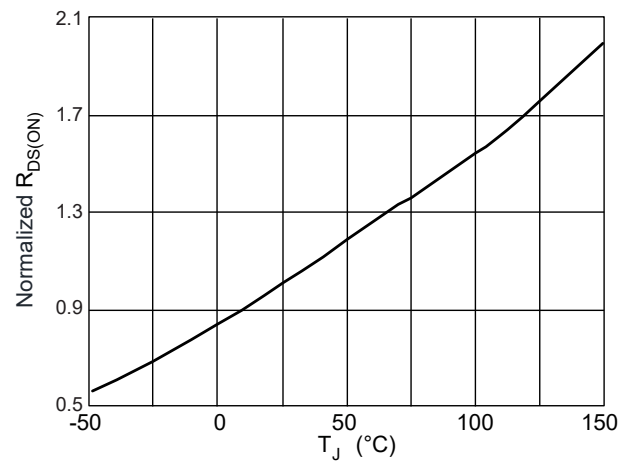


FIG. 11- I_S vs V_{SD}

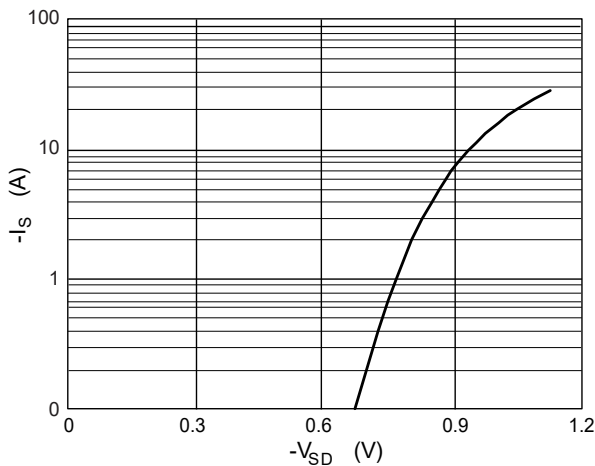
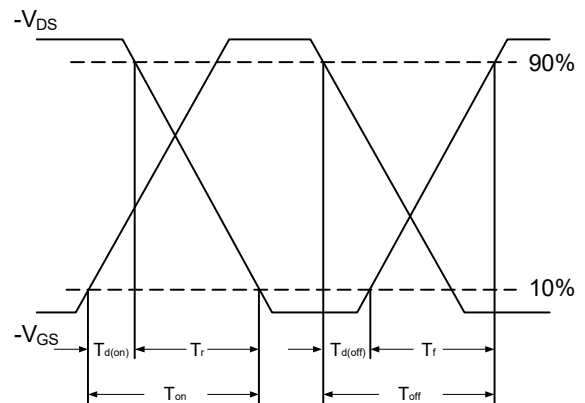


FIG. 12-Switching Time Waveform



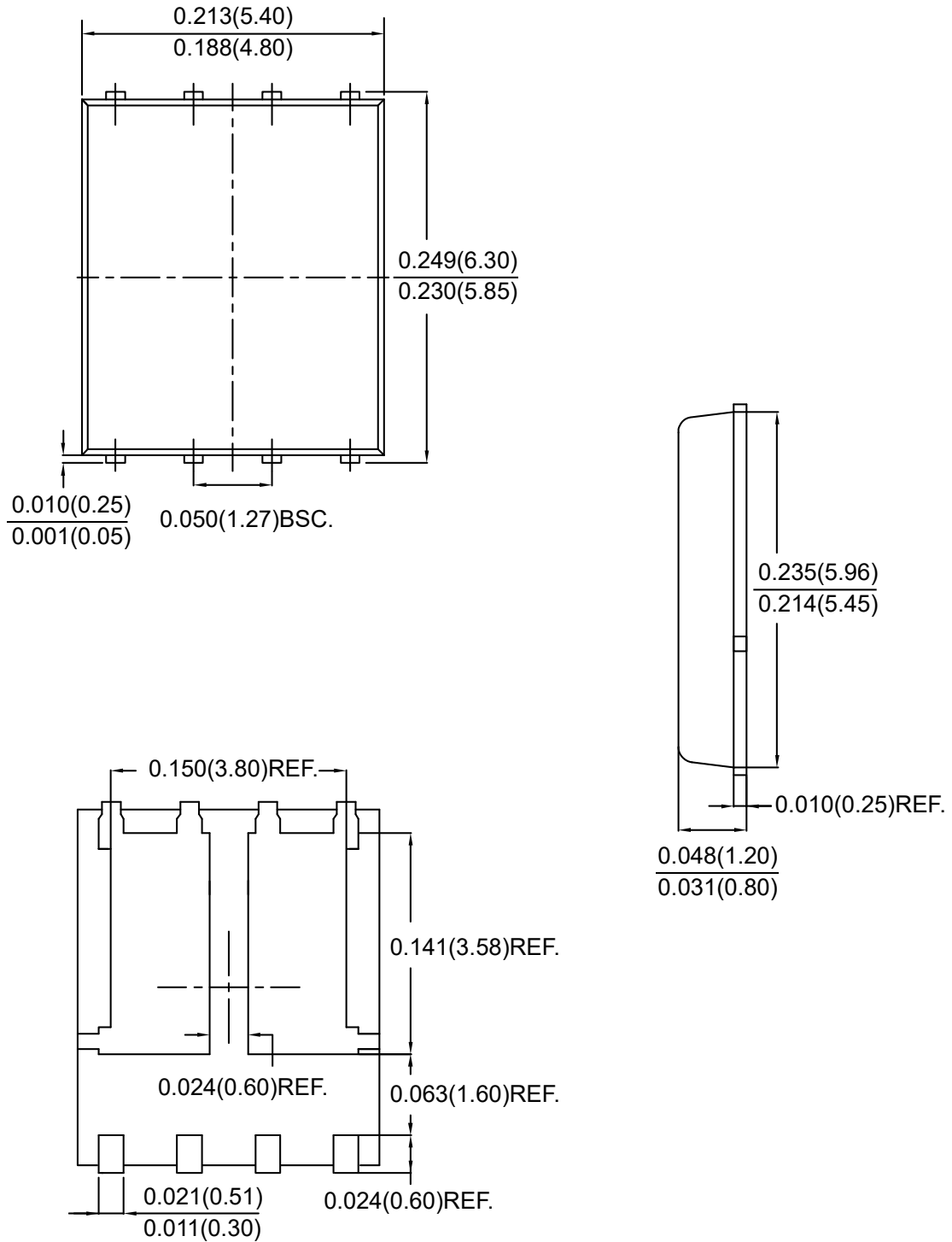


P5MBM075



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Package Outline Dimensions



PPAK5X6 Dual

Dimensions in inches and (millimeters)



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