D2MPD035

40V P-Channel MOSFETs

General Description

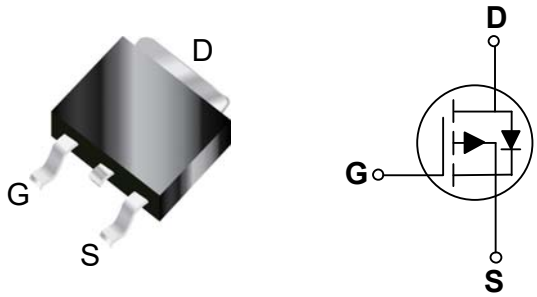
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BV_{DSS}	$R_{DS(ON)}$	I_D
-40 V	35 mΩ	-25 A

Features

- $R_{DS(ON)} \leqq 35m\Omega @ V_{GS}$= -10V
- Fast Switching
- Green Device Available
- Reliable and Rugged

TO-263 Pin Configuration



Applications

- Synchronous Rectification
- Load Switch

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current - Continuous (T_C=25°C)	-25	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	-61	A
EAS	Single Pulse Avalanche Energy (L=0.1mH)	12.8	mJ
IAS	Single Pulse Avalanche Current (L=0.1mH)	-16	A
P_D	Power Dissipation (T_C=25°C)	38	W
T_J	Operating Junction Temperature Range	-55 to 150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
Marking Code		PD035	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	3.3	°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	-40	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}= -32V , 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= -10A	---	---	35	mΩ
		V_{GS}= -4.5V , I_D= -5A	---	---	60	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D= -250uA	-1.0	---	-2.5	V
g_{fs}	Forward Transconductance	V_{DS}=-5V , I_D= -5A	---	14.5	---	S

Dynamic and switching Characteristics (NOTE 3)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}= -20V , V_{GS}= -10V , I_D= -10A	---	26.9	---	nC
Q_{gs}	Gate-Source Charge		---	4.88	---	
Q_{gd}	Gate-Drain Charge		---	4.51	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}= -30V , V_{GS}= -10V , R_{GEN}= 6Ω , I_D= -1A	---	4.8	---	nS
T_r	Rise Time		---	17.6	---	
$T_{d(off)}$	Turn-Off Delay Time		---	88.5	---	
T_f	Fall Time		---	48.8	---	
C_{iss}	Input Capacitance	V_{DS}= -20V , V_{GS}= 0V , F= 1MHz	---	1316	---	pF
C_{oss}	Output Capacitance		---	102	---	
C_{rss}	Reverse Transfer Capacitance		---	78	---	
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , F= 1MHz	---	11	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	V_{GS}= 0V , I_S= -5A	---	---	-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

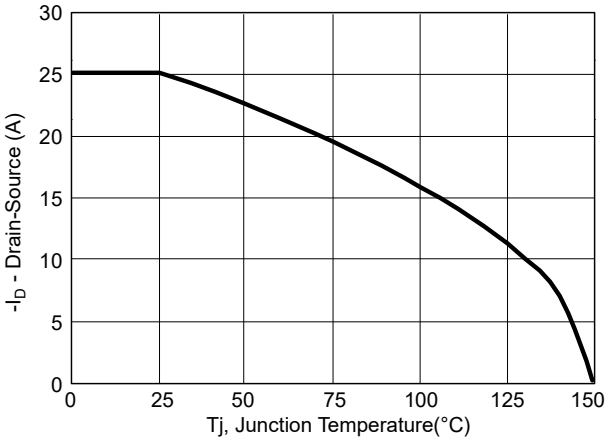


FIG. 2-Drain-Source On−Resistance

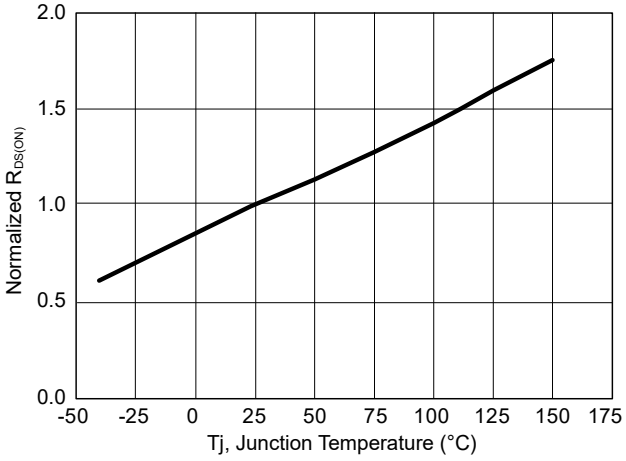


FIG. 3-Gate Threshold Voltage

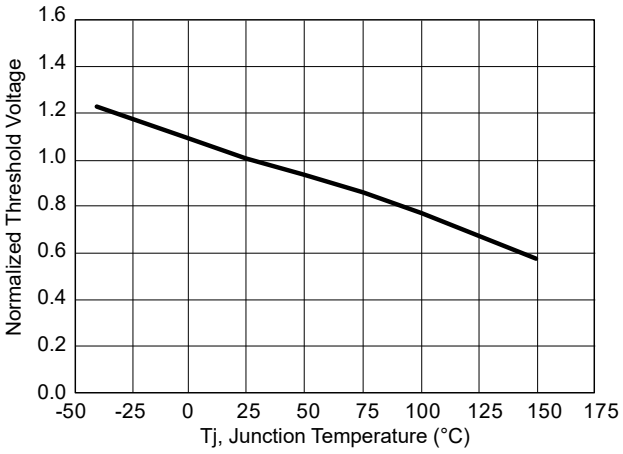


FIG. 4-Gate Charge Characteristics

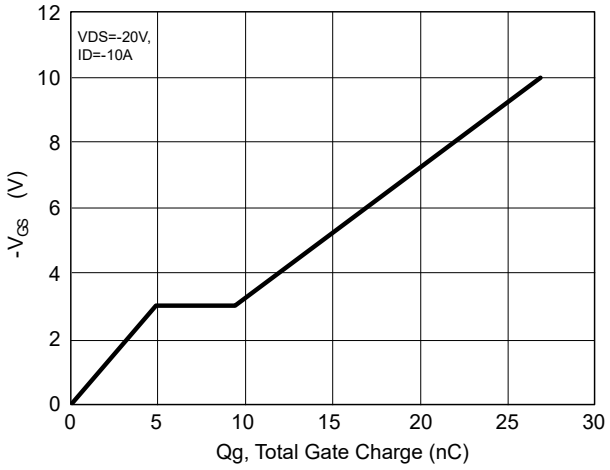


FIG. 5-Safe Operating Area

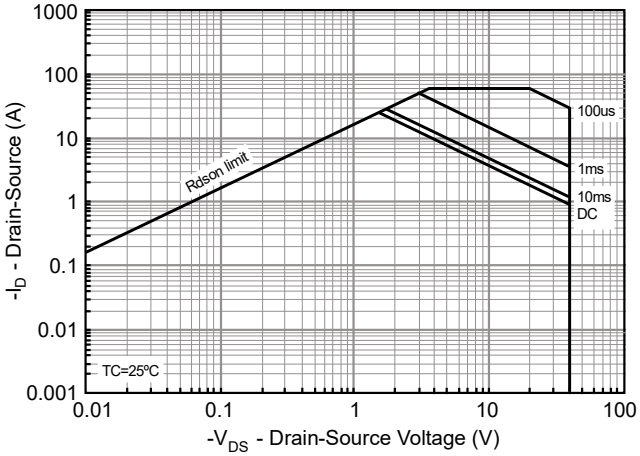
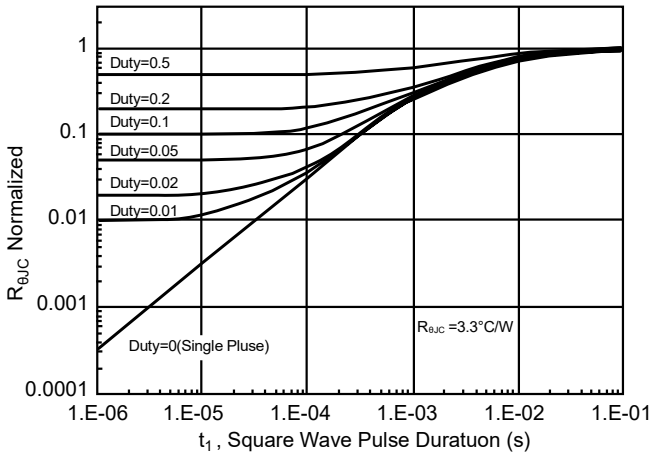
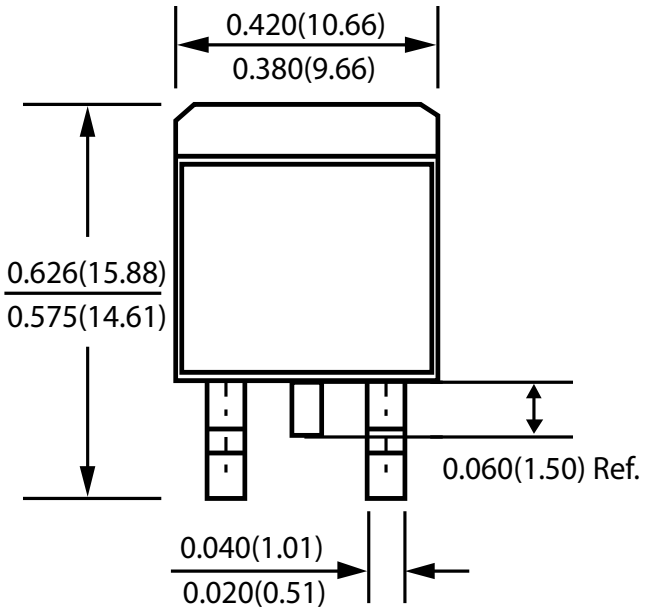
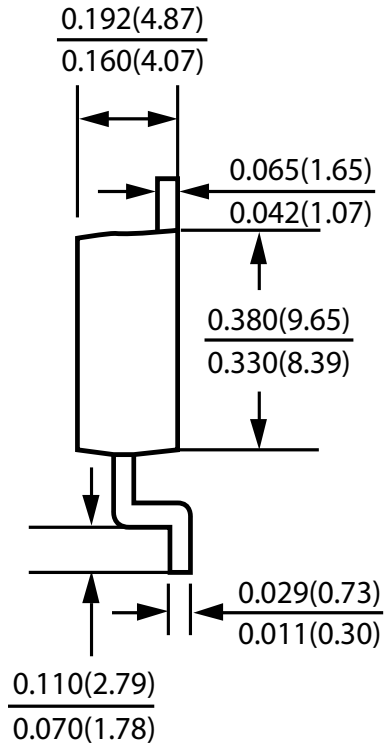


FIG. 6- Source-Drain Forward Voltage



Package Outline Dimensions





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Dimensions in inches and (millimeters)

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