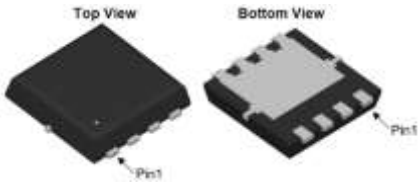
-100V_{DS}/±20V_{GS} P-Channel Enhancement Mode MOSFET

Features

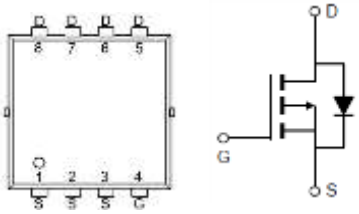
- V_{DS}=-100V,I_D=-40A
- $R_{DS(ON)}$=50mΩ（TYP.）V_{GS}=-10V
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

PDFN5060



Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion



Ordering Information

Device	package	Device Marking	Package Qty.
HM01P40D5	PDFN5060	M01P40D5	5000/PCS

Absolute Maximum Ratings (T$_C$=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	-100	V
Gate-Source Voltage (V_{GS}=0V,static)	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	-40	A
Continuous Drain Current (T_C=100℃)		-	A
Pulesd Drain Current	I_{DM}	-130	A
Avalanche Energy, Single Pulsed	E_{AS}	135	mJ
Maximum Power Dissipation (T_C=25℃)	P_D	78	W
Operating,Storage Temperature Range	T_J,T_{STG}	-55~150	℃

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V	-	-	-1	μA
Gate -Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS},I_D=-250μA	-	-	-2.5	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	V_{GS}=-10V,I_D=-1A	-	-	50	mΩ
		V_{GS}=-4.5V,I_D=-1A	-	-	62	

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	0.96	-	℃/ W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	-	-	-	℃/ W

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	V_{DS}=-15V	-	2119	-	pF
Output capacitance	C_{oss}	V_{GS}=0V	-	1930	-	
Reverse transfer capacitance	C_{rss}	f=1MHz	-	12	-	
Gate Resistance	R_g	f=1MHz	-	6	-	Ω
Total Gate Charge	Q_g	V_{DS}=-15V	-	39	-	nC
Gate Source Charge	Q_{gs}	V_{GS}=-10V	-	7.7	-	
Gate Drain Charge	Q_{gd}	I_D=-15A	-	8.5	-	
Turn-on delay Time	$t_{d(on)}$	V_{GS}=-10V	-	12	-	ns
Rise time	t_r	V_{DS}=-15V	-	18	-	
Turn-off delay Time	$t_{d(off)}$	R_L=1Ω	-	100	-	
Fall time	t_f	R_G=3Ω	-	105	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_{SD}=-1A	-	-	-1.2	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V,I_{SD}=-15A	-	104	-	ns
Reverse Recovery Charge	Q_{rr}	d_i/d_t=100A/μs	-	280	-	nC

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

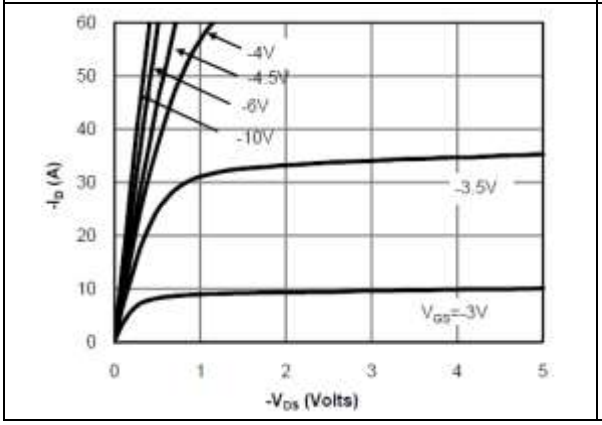


Figure 2. Transfer Characteristics

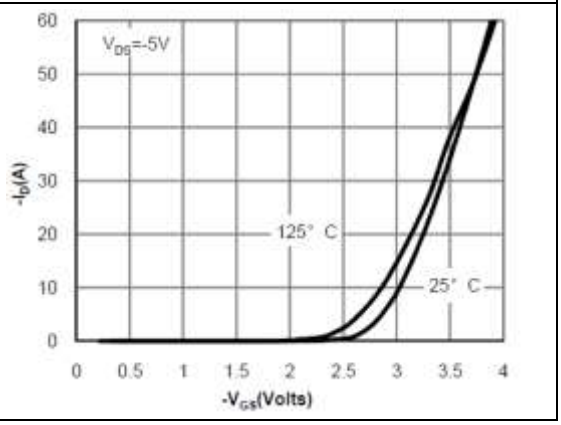


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

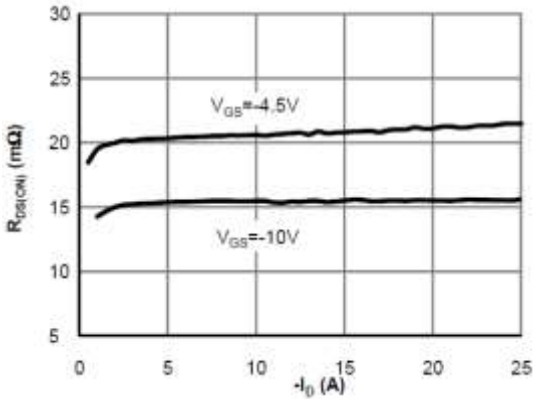


Figure 4. On-Resistance vs. Junction Temperature

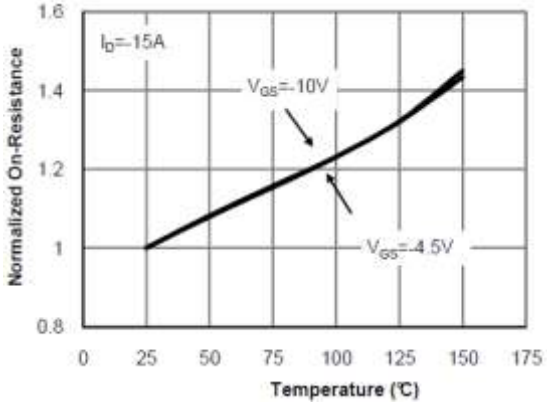


Figure 5. On-Resistance vs. Gate-Source Voltage

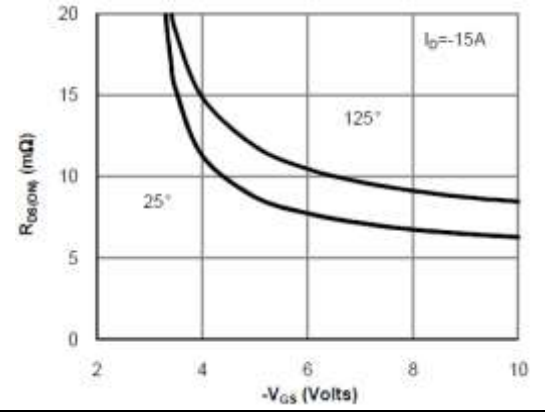


Figure 6. Body-Diode Characteristics

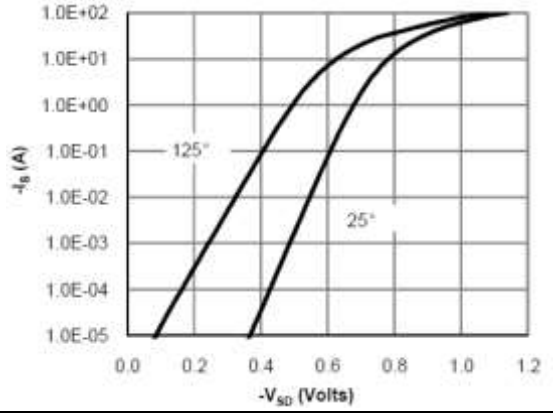


Figure 7. Gate-Charge Characteristics

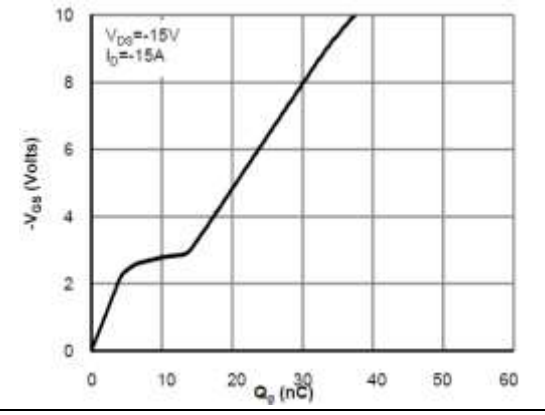


Figure 8. Capacitance Characteristics

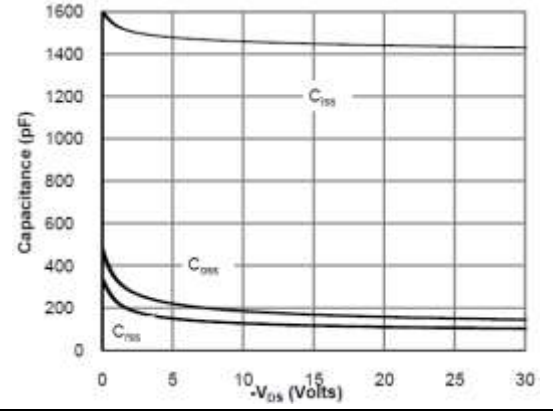


Figure 9. Maximum Forward Biased Safe Operating Area

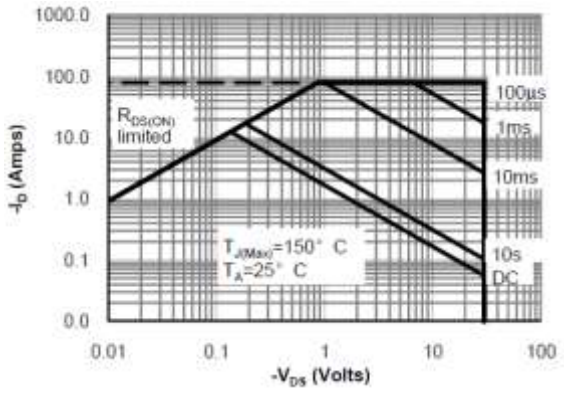


Figure 10. Single Pulse Power Rating Junction-to-Ambient

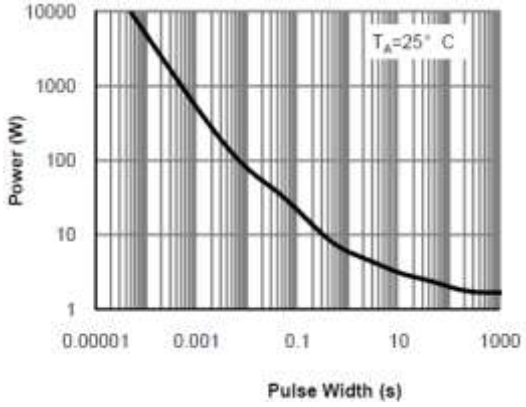


Figure 11. Normalized Maximum Transient Thermal Impedance