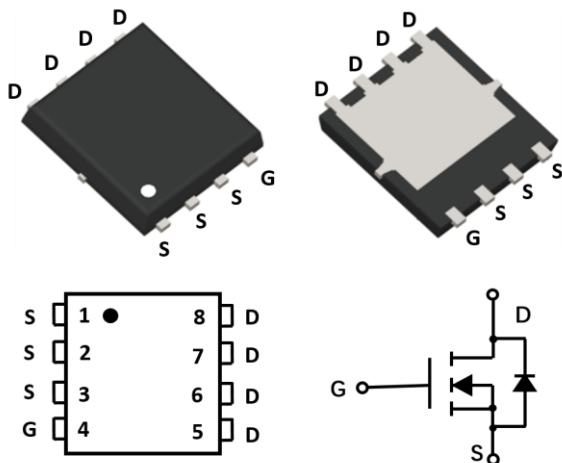


N-Channel Enhancement Mode Field Effect Transistor

PDFN5060-8L



Product Summary

- V_{DS} 80V
- I_D 64A
- I_D (Package limited) 48A
- $R_{DS(on)}$ (at $V_{GS}=10V$) <8.0 mohm
- $R_{DS(on)}$ (at $V_{GS}=4.5V$) <10.0 mohm
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

Applications

- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor
- Invertors

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	80	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current		I_D	64	A
Drain Current ^A	$T_C=25^\circ\text{C}$	I_D	48	A
	$T_C=100^\circ\text{C}$		30.2	
Pulsed Drain Current ^B		I_{DM}	192	A
Avalanche energy ^C		E_{AS}	25	mJ
Total Power Dissipation ^D	$T_C=25^\circ\text{C}$	P_D	87	W
	$T_C=100^\circ\text{C}$		35	
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	1.72	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Ambient		$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+175	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
LM5D48N06A	F1		5000			13" reel

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	80			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V,V _{GS} =0V			1	μA
Gate-Body 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	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D =12A		6.2	8.0	mΩ
		V _{GS} = 4.5V, I _D =9A		7.8	10	
Diode Forward Voltage	V _{SD}	I _S =20A,V _{GS} =0V			1.3	V
Maximum Body-Diode Continuous Current	I _S				48	A
Gate resistance	R _G	f= 1 MHz, Open drain		3.3		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V,V _{GS} =0V,f=100KHZ		2028		pF
Output Capacitance	C _{oss}			716		
Reverse Transfer Capacitance	C _{rss}			54		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =50V,I _D =25A		28.9		nC
Gate-Source Charge	Q _{gs}			5.4		
Gate-Drain Charge	Q _{gd}			4.9		
Reverse Recovery Chrage	Q _{rr}	I _F =25A, di/dt=100A/us		61		ns
Reverse Recovery Time	t _{rr}			51		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V,I _D =25A R _{GEN} =2.5Ω		22.5		
Turn-on Rise Time	t _r			6.3		
Turn-off Delay Time	t _{D(off)}			47.5		
Turn-off fall Time	t _f			8.8		

- A. The maximum current rating is package limited.
 B. Repetitive rating; pulse width limited by max. junction temperature.
 C. V_{DD}=50V, R_G=25Ω, L=0.3mH, starting T_J=25 °C.
 D. Pd is based on max. junction temperature, using junction-case thermal resistance.

■ Typical Performance Characteristics

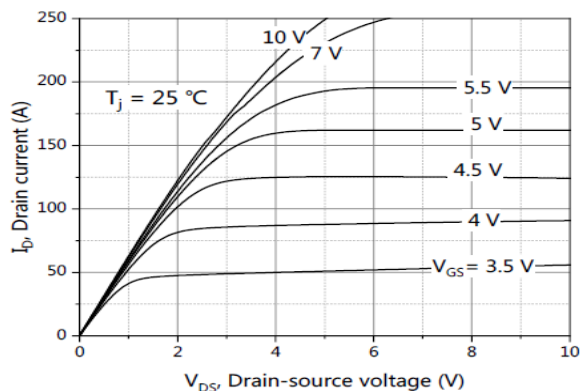


Figure1. Output Characteristics

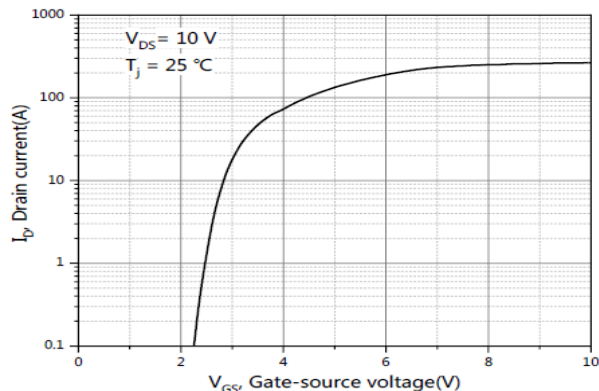


Figure2. Transfer Characteristics

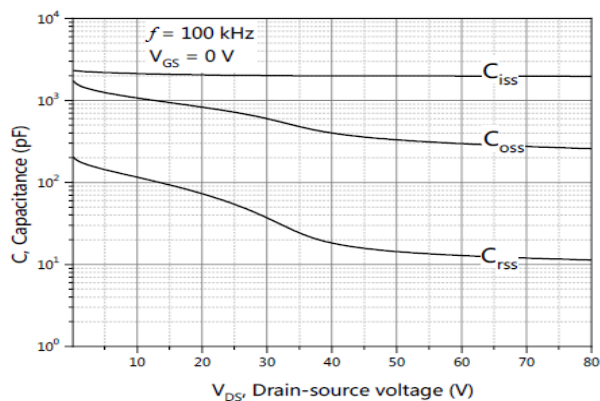


Figure3. Capacitance Characteristics

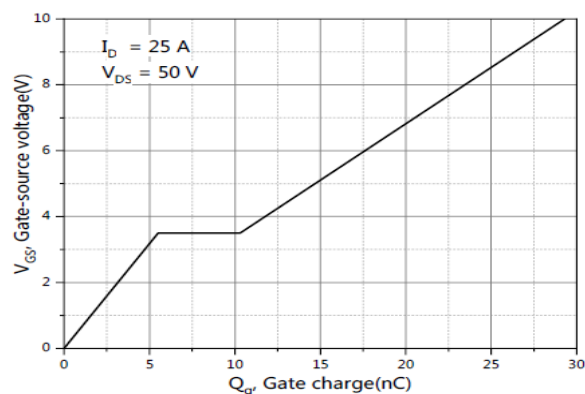


Figure4. Gate Charge

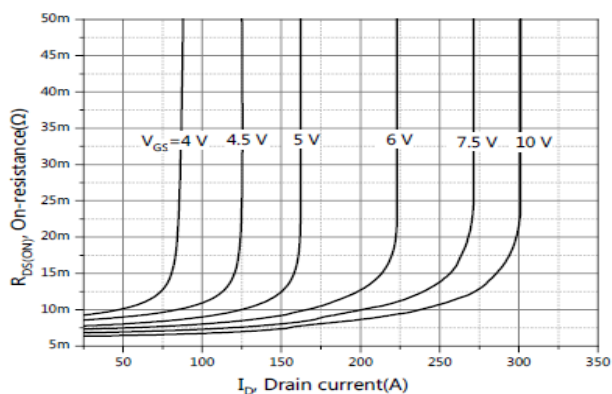


Figure5. Drain-Source on Resistance

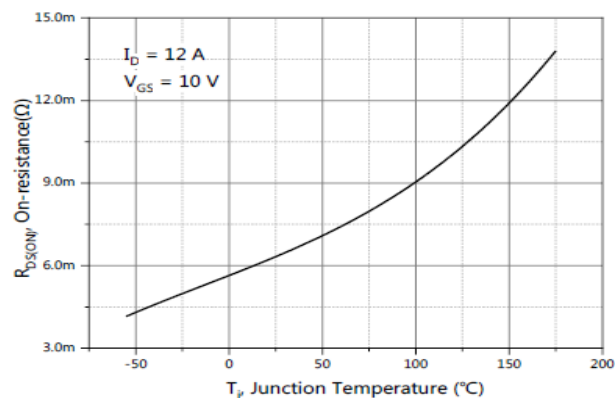


Figure6. Drain-Source on Resistance

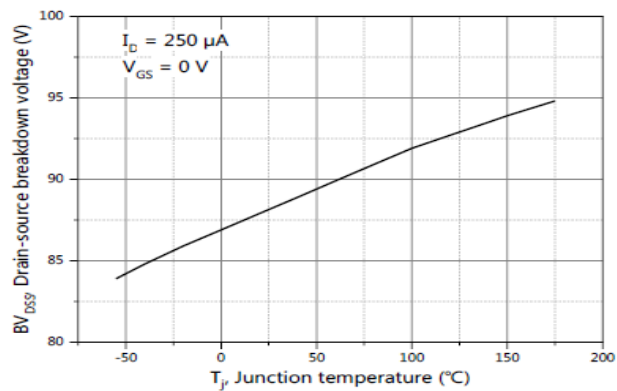


Figure7. Drain-source breakdown voltage

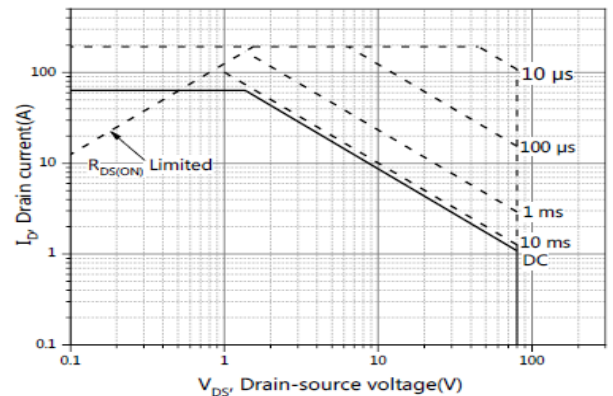


Figure8.Safe Operation Area

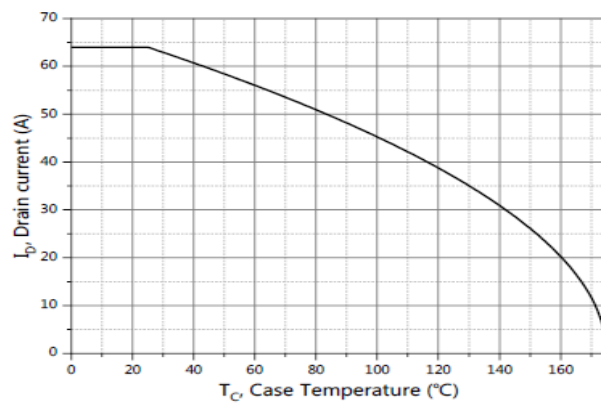


Figure9. Drain current

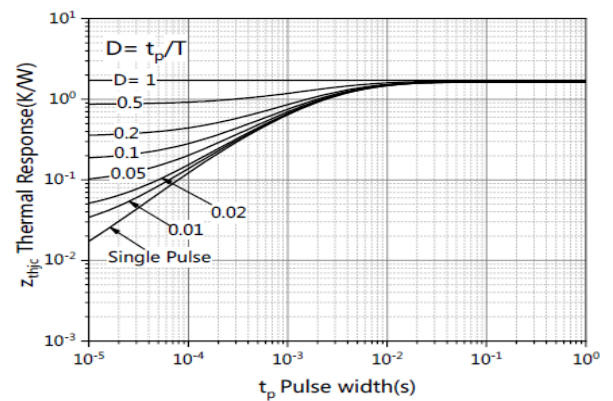


Figure10.Transient thermal impedance

■ DFN5x6-8L Package information

