

P-Channel -60V MOSFET

FEATURES

- Trench Process Technology
- Ultra Low On-resistance Design

Application

- BMS Application
- Consumer Electronics
- DC/DC Converters

Mechanical

- Case:DFN5060 Package

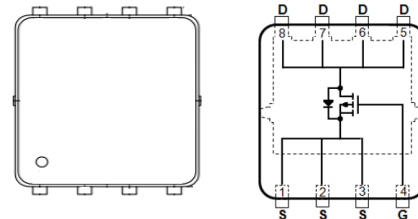
Packing Information

Package	Packing
DFN5060	3K/13" Reel

PRODUCTY SUMMARY

V_{DS}	$R_{DS(on)}$ (m Ω) Max	
-60	20	@ $V_{GS}=-10V$
	21.5	@ $V_{GS}=-4.5V$

DFN5060



Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁾	I_{DSM}	-20	A
Continuous Drain Current ⁴⁾	I_D	-80	A
Continuous Drain Current ⁵⁾	I_{DM}	-228	A
Maximum Power Dissipation	P_D	6	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}C$

Typical Thermal Resistance

Parameter	Symbol	Limit	Unit
Junction-to-Ambient Thermal Resistance ⁵⁾	$R_{\theta JA}$	65	$^{\circ}C/W$

Note:

1. Pulse width<300us, Duty cycle<2%.
2. Fused current that based on wire numbers and diameter.
3. Guaranteed by design, not subject to production testing.
4. The maximum current rating is package limited.
5. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}C$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^{\circ}C$.

Electrical Characteristics ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Characteristics	Symbol	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	B _{VDSS}	V _{GS} =0V, I _D =-250μA	-60	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.5	-3.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-10.0V, I _D =-10A	-	17.5	20	mΩ
		V _{GS} =-4.5V, I _D =-8A	-	19.5	21.5	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V	-	-	-1.0	μA
GateSource Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	-100	nA

Dynamic ³⁾

Total Gate Charge	Q_g	$V_{DS}=-30V, V_{GS}=0 \text{ to } -10V, I_D=-3.5A$	-	23	-	nC
Gate-Source Charge	Q_{gs}		-	10	-	
Gate-Drain Charge	Q_{gd}		-	11	-	
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$	-	2962	-	pF
Output Capacitance	C_{oss}		-	237	-	
Reverse Transfer Capacitance	C_{rss}		-	160	-	

Switching

Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-30V, V_{GS}=-10V, R_g=3.0\Omega$	-	20	-	ns
Turn-On Rise Time	t_r		-	21	-	
Turn-Off Delay Time	$t_{d(off)}$		-	69	-	
Turn-Off Fall Time	t_f		-	13	-	

Drain-Source Diode

Maximum Continuous Body Diode Forward Current	I_S	$T_C=25^\circ\text{C}$	-	-	-1.2	A
Diode Forward Voltage	V_{SD}	$I_S=-1.0A, V_{GS}=0V$	-	-0.9	-1.3	V

Note:

1. Pulse width<300us, Duty cycle<2%.

2. Essentially independent of operating temperature typical characteristics.

3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$.

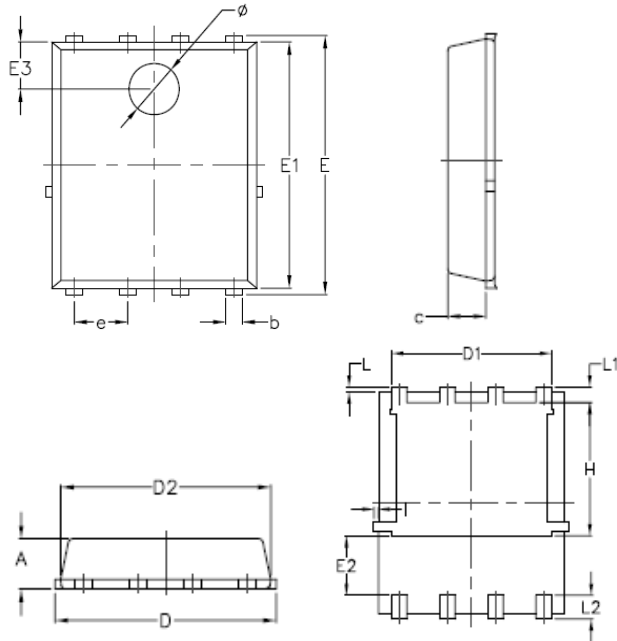
4. The maximum current rating is package limited.

5. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch² with 2oz.square pad of copper.

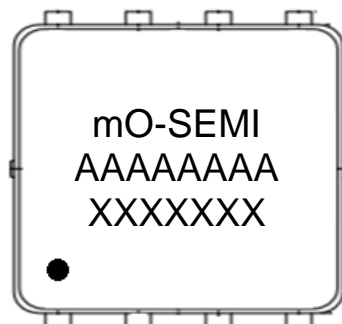
6. Guaranteed by design, not subject to production testing.

Package Outline Dimensions (inches and millimeters)

DFN5060				
SYMBOL	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	1.03	1.17	0.041	0.046
b	0.34	0.48	0.013	0.019
c	0.82	0.97	0.032	0.038
D	4.80	5.40	0.189	0.213
D1	4.11	4.31	0.162	0.170
D2	4.80	5.00	0.189	0.197
E	5.95	6.15	0.234	0.242
E1	5.65	5.85	0.222	0.230
E2	1.40	-	0.055	-
E3	1.00	1.20	0.039	0.047
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.002	0.010
L1	0.38	0.50	0.015	0.020
L2	0.38	0.71	0.015	0.028
H	3.30	3.50	0.130	0.138
I	-	0.18	-	0.007
Φ	1.10	1.30	0.043	0.051



Marking Information



First line = Company name

AAAAA = Product number

XXXXXX = Tracking number

Fourth line = Pin1 Point

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