

### N Channel 20V (DS) MOSFET

#### FEATURES

- Advance Trench Process Technology
- High Density Cell Design for Ultra Low Onresistance

#### Application

- Portable Devices
- Consumer Electronics

#### Mechanical

- Case: DFN5060 Package

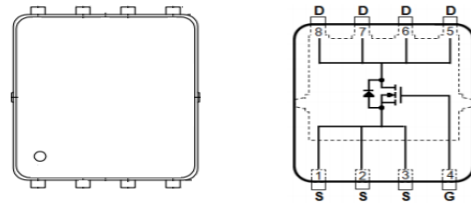
#### Packing Information

Package	Packing
DFN5060	3Kpcs/13"Reel

#### PRODUCTY SUMMARY

$V_{DS}$	$R_{DS(on)}$ m( $\Omega$ )		$I_D$ (A)
20	2.2	@ $V_{GS}=4.5V$	20
	4.0	@ $V_{GS}=2.5V$	20

#### DFN5060



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

Parameter	Symbol	Limit	Unit
DrainSource Voltage	$V_{DS}$	20	V
GateSource Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>1)</sup>	$I_D$	20	A
Maximum Power Dissipation	$P_D$	6	W
Pulsed Drain Current <sup>2)</sup>	$I_{DM}$	80	A
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	55~150	$^{\circ}C$

#### Typical Thermal Resistance

Parameter	Symbol	Limit	Unit
JunctiontoAmbient Thermal Resistance <sup>3)</sup>	$R_{\theta JA}$	62.5	$^{\circ}C/W$

Note:

1. Fused current that based on wire numbers and diameter
2. Repetitive Rating: Pulse width limited by the maximum junction temperature
3. 1-in2 2oz Cu PCB board

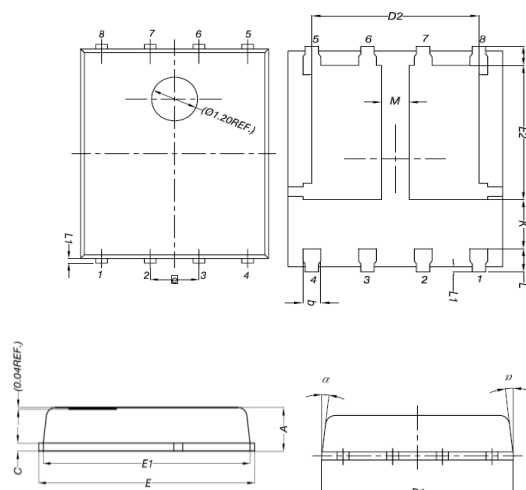
Electrical Characteristics (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)						
Characteristics	Symbol	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
DrainSource Breakdown Voltage	B <sub>VDSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250uA	20	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	0.50	0.63	1.50	V
DrainSource OnState Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =20.0A	-	1.9	2.2	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =20.0A	-	3.4	4.0	mΩ
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V	-	-	1	uA
GateSource Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	-	-	± 100	nA
Dynamic <sup>3)</sup>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V,V <sub>GS</sub> =4.5V,I <sub>D</sub> 20A	-	62	99.2	nC
GateSource Charge	Q <sub>gs</sub>		-	4	-	nC
GateDrain Charge	Q <sub>gd</sub>		-	21	-	nC
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V,V <sub>GS</sub> =0V,F=1MHz	-	4000	6400	pF
Output Capacitance	C <sub>oss</sub>		-	780	-	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	625	-	pF
Switching						
TurnOn Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =10V,R <sub>G</sub> =3.3Ω V <sub>GS</sub> =5V,I <sub>D</sub> =1A	-	12	-	ns
TurnOn Rise Time	t <sub>r</sub>		-	20	-	ns
TurnOff Delay Time	t <sub>d(off)</sub>		-	100	-	ns
TurnOff Fall Time	t <sub>f</sub>		-	80	-	ns
DrainSource Diode						
Maximum Continuous Body Diode Forward Current	I <sub>S</sub>	VG=VD=0V , Force Current	-	-	1.2	A
Diode Forward Voltage	V <sub>SD</sub>	IS=1.0A, VGS=0V	-	-	1.5	V

**NOTES :**

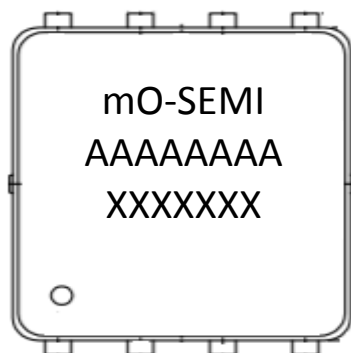
- Pulse width<300us, Duty cycle<2%.
- Essentially independent of operating temperature typical characteristics.
- Repetitive rating, pulse width limited by junction temperature T<sub>J</sub>(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub> =25°C.
- The maximum current rating is package limited.
- RQJA 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 inch<sup>2</sup> with 2oz. square pad of copper.
- Guaranteed by design. not subject to production testing.

## Package Outline Dimensions ( inches and millimeters)

DFN5*6				
SYMBOL	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.10	0.04	0.04
b	0.33	0.51	0.01	0.02
C	0.20	0.30	0.01	0.01
D1	4.80	5.00	0.19	0.20
D2	3.61	3.96	0.14	0.16
E	5.90	6.10	0.23	0.24
E1	5.70	5.80	0.22	0.23
E2	3.38	3.78	0.13	0.15
e	1.27 bsc			
H	0.41	0.61	0.02	0.02
K	1.10	-	0.04	-
L	0.51	0.71	0.02	0.03
L1	0.06	0.20	0.00	0.01
M	0.50	-	0.02	-
α	0°	12°	-	-



## Marking Information



First line: company name

AAAAA = Product number

XXXXXX = Tracking number

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