

N-Channel 30V MOSFET

FEATURES

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

Application

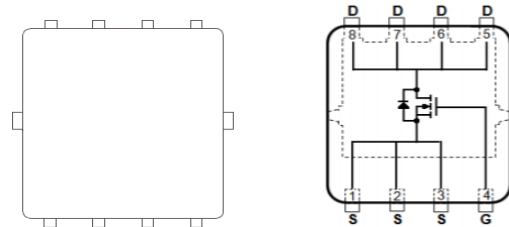
- Portable Devices
- Consumer Electronics

Mechanical

- Case: DFN3333 Package

PRODUCTY SUMMARY		
V_{DS}	$R_{DS(on)}$ m(Ω) Max	
30	3.5	@ $V_{GS}=10V$
	8.0	@ $V_{GS}=4.5V$

DFN3333



Packing Information

Package	Packing
DFN3333	5Kpcs/13"Reel

Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise specified)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁾	I_D	20	A
Continuous Drain Current ⁴⁾	I_{DM}	80	A
Maximum Power Dissipation	P_D	5	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 ³⁾	$R_{\theta JA}$	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°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 =250uA	30	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0	1.6	2.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	3.0	3.5	mΩ
		V _{GS} =4.5V, I _D =20A	-	5.5	8.0	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	uA
GateSource Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	± 100	nA

Dynamic ³⁾

Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =1.5A	-	53	-	nC
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =4.5V, I _D =1.5A ^(Note 1,2)	-	26	-	nC
GateSource Charge	Q _{gs}		-	5	-	nC
GateDrain Charge	Q _{gd}		-	12	-	nC
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=200KHz	-	2869	-	pF
Output Capacitance	C _{oss}		-	310	-	pF
Reverse Transfer Capacitance	C _{rss}		-	271	-	pF

Switching

TurnOn Delay Time	t _{d(on)}	V _{DS} =15V, R _{load} =10Ohm, V _{gen} =10V, R _g =30hm		17	-	ns
TurnOn Rise Time	t _r			12	-	ns
TurnOff Delay Time	t _{d(off)}			58	-	ns
TurnOff Fall Time	t _f			11	-	ns

DrainSource Diode

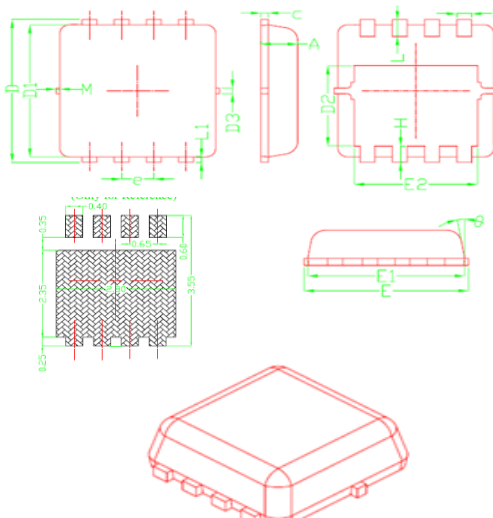
Maximum Continuous Body Diode Forward Current	I _S	-	-	-	1.2	A
Diode Forward Voltage	V _{SD}	I _S =1.0A, V _{GS} =0V	-	-	1.5	V

Note:

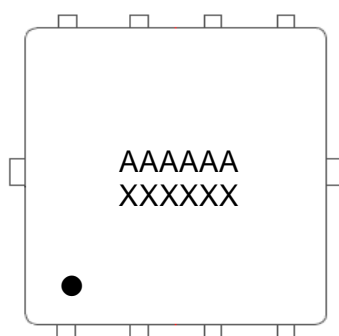
1. Pulse width<300us, Duty cycle<2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.
4. The maximum current rating is package limited.
5. R_{QJA} 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)

DFN3333				
SYMBOL	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	0.70	0.80	0.028	0.031
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.25	3.45	0.128	0.136
D1	3.00	3.20	0.118	0.126
D2	1.78	1.98	0.070	0.078
D3	-	0.13	-	0.005
E	3.20	3.40	0.126	0.134
E1	3.00	3.20	0.118	0.126
E2	2.39	2.59	0.094	0.102
e	0.65BSC			
H	0.30	0.50	0.012	0.020
L	0.30	0.50	0.012	0.020
L1	0.13	-	-	0.005
θ	-	12 °	-	12 °
M	-	0.15	-	0.006



Marking Information



AAAAAA = Product number

XXXXXX = Tracking number

Third line = Pin1 Point

Motive reserves the right to make changes without further notice to any products herein. Motive makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motive assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in Motive data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motive does not convey any license under its patent rights nor the rights of others. Motive products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motive product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motive products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motive and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motive was negligent regarding the design or manufacture of the part.