

#### P-Channel 30V MOSFET

#### FEATURES

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

#### Application

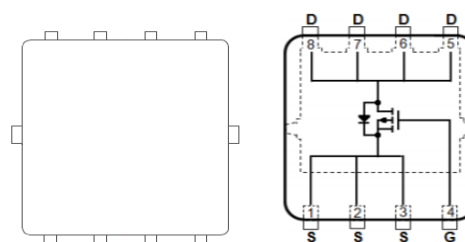
- Portable Devices
- Consumer Electronics

#### Mechanical

- Case: DFN3333 Package

PRODUCTY SUMMARY		
$V_{DS}$	$R_{DS(on)}$ m( $\Omega$ ) Max	
-30	12.0	@ $V_{GS} = -10V$
	14.5	@ $V_{GS} = -4.5V$

#### DFN3333



#### Packing Information

Package	Packing
DFN3333	5Kpcs/13"Reel

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1)</sup>	$I_D$	-20	A
Continuous Drain Current <sup>4)</sup>	$I_{DM}$	-80	A
Maximum Power Dissipation	$P_D$	5	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

#### Typical Thermal Resistance

Parameter	Symbol	Limit	Unit
Junction-to-Ambient Thermal Resistance <sup>3)</sup>	$R_{\theta JA}$	65	$^\circ\text{C/W}$

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  $T_{J(MAX)} = 150^\circ\text{C}$ . Ratings are based on low frequency and duty cycles to keep initial  $T_J = 25^\circ\text{C}$ .

Electrical Characteristics (T <sub>A</sub> =25°C UNLESS OTHERWISE NOTED)						
Characteristics	Symbol	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	B <sub>VDSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1.0	-1.5	-3.0	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-17A	-	9.0	12.0	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-16A	-	12.0	14.5	mΩ
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V	-	-	1	uA
GateSource Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	± 100	nA

Dynamic <sup>3)</sup>						
Total Gate Charge	Qg	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-1.5A	-	68	-	nC
Total Gate Charge	Qg	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1.5A (Note 1,2)	-	34	-	nC
GateSource Charge	Q <sub>gs</sub>		-	6	-	nC
GateDrain Charge	Q <sub>gd</sub>		-	14	-	nC
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=200KHz	-	3497	-	pF
Output Capacitance	C <sub>oss</sub>		-	339	-	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	295	-	pF

Switching						
TurnOn Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =-15V, Rload=10Ohm, Vgen=-10V, Rg=30hm	-	4	-	ns
TurnOn Rise Time	t <sub>r</sub>		-	22	-	ns
TurnOff Delay Time	t <sub>d(off)</sub>		-	84	-	ns
TurnOff Fall Time	t <sub>f</sub>		-	17	-	ns

DrainSource Diode						
Maximum Continuous Body Diode Forward Current	I <sub>S</sub>	-	-	-	-1.2	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.0A, V <sub>GS</sub> =0V	-	-	-1.5	V

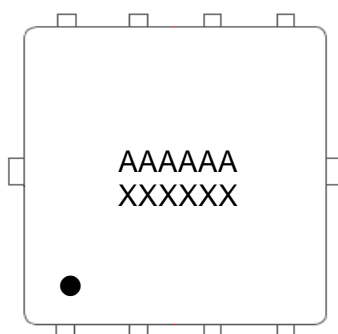
Note:

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<sub>J(MAX)</sub>=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25°C.
4. The maximum current rating is package limited.
5. R<sub>QJA</sub> 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.
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

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