P-Channel Trench Power MOSFET with Ultra-low Reverse Leakage Current

General Description

This device is designed specifically as a single package solution for the battery charge switch in cellular handset and other ultra-portable applications. It features a MOSFET with low on-state resistance.

The MicroFET 2x2 package offers exceptional thermal performance for it's physical size and is well suited to linear mode applications.

Features

- **One Chip Solution**
- **Low Chargeable Voltage (4.3V)**
- **Ultra-low Reverse Leakage Current (<10nA@25°C)**
- **Low Reverse Leakage Current in High Temperature (<1μA@125°C)**

Ordering Information

RP1800A/B/C □□

Package Type
QW: WDFN-6L 2x2 (W-Type) (RP1800A)
QW: WDFN-8L 3x2 (W-Type) (RP1800B)
QW: WDFN-8L 3x2 (W-Type) (Without Exposed Pad) (RP1800C)

Operating Temperature Range
G: Green (Halogen Free with Commercial Standard

Note :

Richpower Green products are :

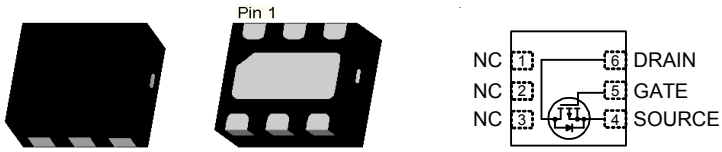
- RoHS compliant and compatible with the current requirements of IPC/JEDEC J-STD-020.
- Suitable for use in SnPb or Pb-free soldering processes.

Marking Information

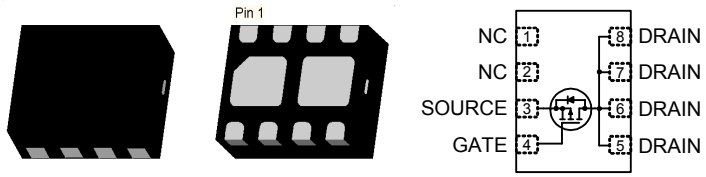
For marking information, contact our sales representative directly or through a Richpower distributor located in your area.

Pin Configurations

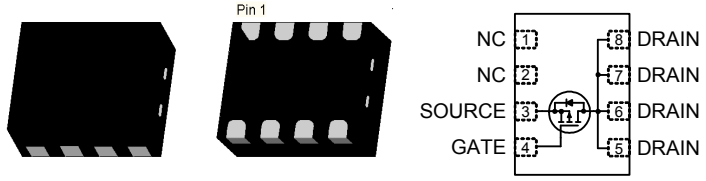
(TOP VIEW)



WDFN-6L 2x2 (RP1800AGQW)



WDFN-8L 3x2 (RP1800BGQW)



WDFN-8L 3x2 (Without Exposed Pad) (RP1800CGQW)

Absolute Maximum Ratings

(T_A = 25°C , unless otherwise specified)

Symbol	Parameter	Ratings	Units
V_{DSS}	MOSFET DRAIN-SOURCE Voltage	-16	V
V_{GSS}	MOSFET GATE-SOURCE Voltage	±7	V
I_D	Drain Current-Continuous	-2.2	A
V_R	Reverse Voltage	7	V
P_D	Power Dissipation for Single Operation	1.5	W
T_J	Operating and Storage Junction Temperature Range	-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	80	°C/W

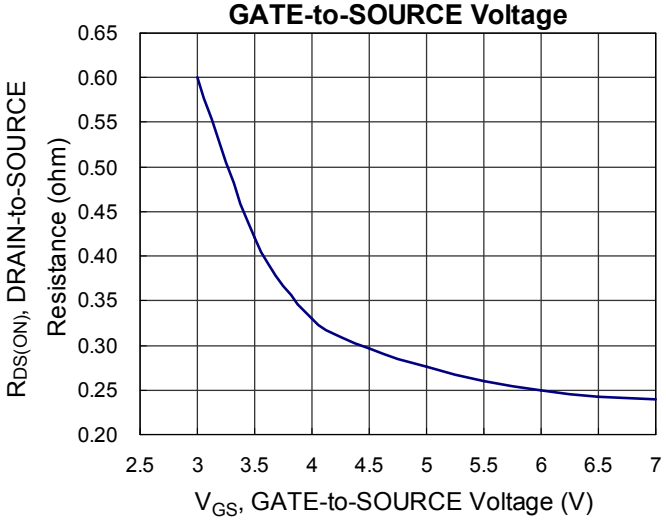
Electrical Characteristics

(T_A = 25°C , unless otherwise specified)

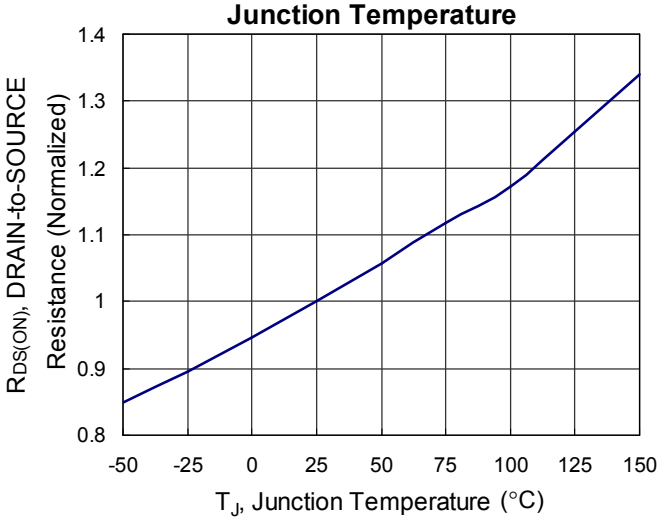
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	DRAIN-SOURCE Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	-16	--	--	V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I_D = -250μA, Referenced to 25°C	--	-2	--	mV/ °C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -14V, V_{GS} = 0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage	V_{GS} = ±7V, V_S = 0V, Drain pin Floating	--	--	±100	nA
I_R	Reverse Leakage	V_R = 5V, T_J = 25°C	--	0.004	1	μA
		V_R = 5V, T_J = 125°C	--	0.2	--	
On Characteristics						
$V_{GS(TH)}$	GATE Threshold Voltage	V_{DS}= V_{GS}, I_D = -250μA	-1.4	-2	-2.6	V
$\frac{\Delta V_{GS(TH)}}{\Delta T_J}$	GATE Threshold Voltage Temperature Coefficient	I_D = -250μA, Referenced to 25°C	--	3	--	mV/ °C
$R_{DS(ON)}$	Static DRAIN-SOURCE On-Resistance	V_{GS} = -4.5V, I_D = -0.5A	--	250	400	mΩ

Typical Operating Characteristics

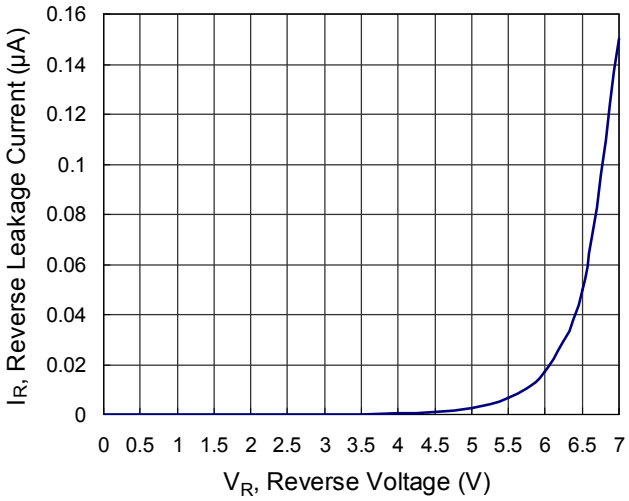
DRAIN-to-SOURCE Resistance vs. GATE-to-SOURCE Voltage



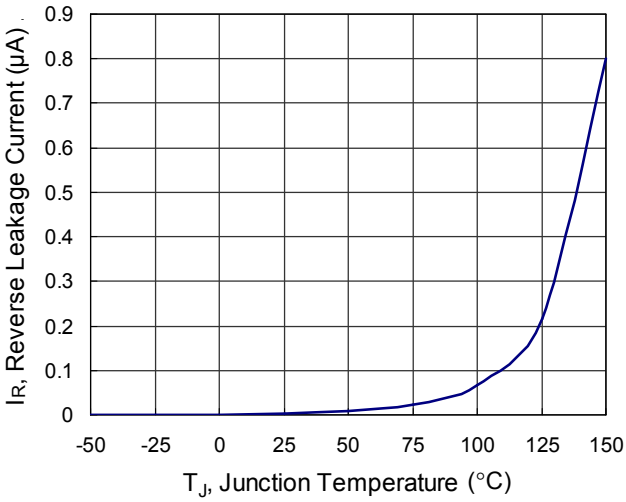
DRAIN-to-SOURCE Resistance (Normalized) vs. Junction Temperature



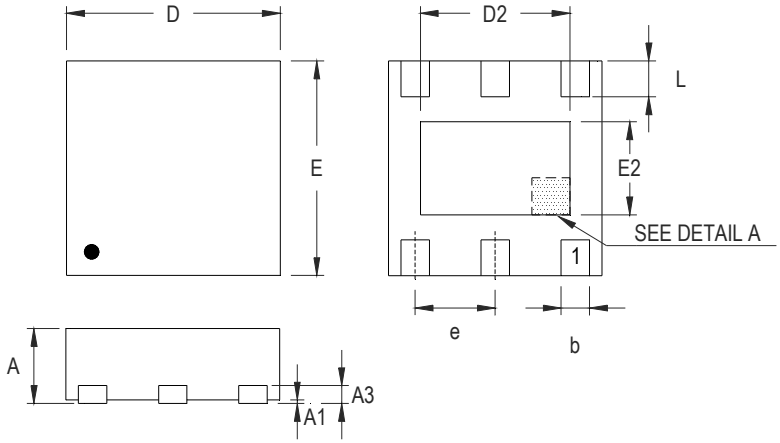
Reverse Leakage Current vs. Reverse Voltage

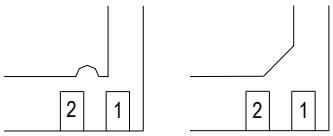


Reverse Leakage Current vs. Junction Temperature



Outline Dimension





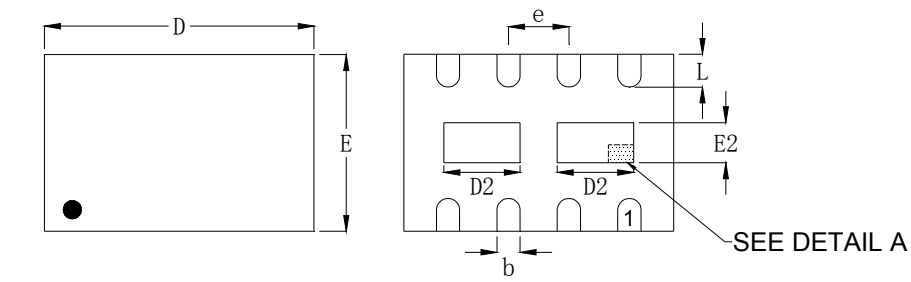
DETAIL A

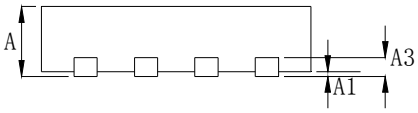
Pin #1 ID and Tie Bar Mark Options

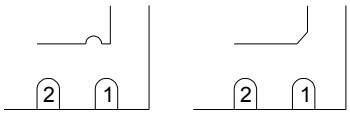
Note : The configuration of the Pin #1 identifier is optional, but must be located within the zone indicated.

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.175	0.250	0.007	0.010
b	0.200	0.350	0.008	0.014
D	1.950	2.050	0.077	0.081
D2	1.000	1.450	0.039	0.057
E	1.950	2.050	0.077	0.081
E2	0.500	0.850	0.020	0.033
e	0.650		0.026	
L	0.300	0.400	0.012	0.016

W-Type 6L DFN 2x2 Package







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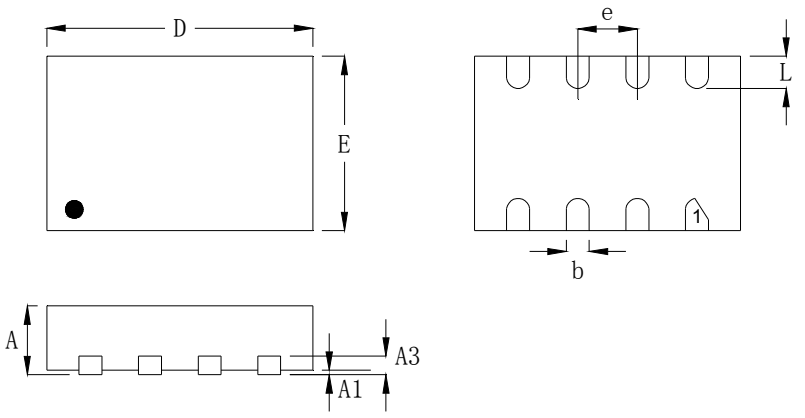
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF		0.008REF	
b	0.250	0.350	0.010	0.014
D	2.900	3.100	0.114	0.122
D2	0.820	1.020	0.032	0.040
E	1.900	2.100	0.075	0.083
E2	0.430	0.630	0.017	0.025
e	0.650TYP		0.026TYP	
L	0.250	0.450	0.010	0.018

W-Type 8L DFN 3x2 Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF		0.008REF	
b	0.250	0.350	0.010	0.014
D	2.900	3.100	0.114	0.122
E	1.900	2.100	0.075	0.083
e	0.650TYP		0.026TYP	
L	0.250	0.450	0.010	0.018

W-Type 8L DFN (Without Exposed Pad) 3x2 Package

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