

Description

The 1216D2 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages. This device is suitable for use as a load switching application and a wide variety of other applications.

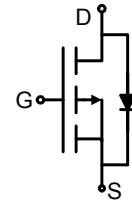
General Features

- | V_{DSS} | $R_{DS(ON)}$
@-4.5V(Typ) | $R_{DS(ON)}$
@-2.5V(Typ) | I_D |
|-----------|-----------------------------|-----------------------------|-------|
| -12V | 12.7m Ω | 19m Ω | -16A |

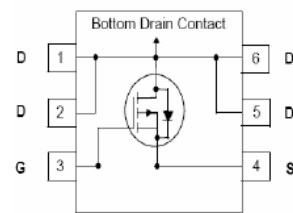
- Advanced trench MOSFET process technology
- Ultra low on-resistance with low gate charge

Application

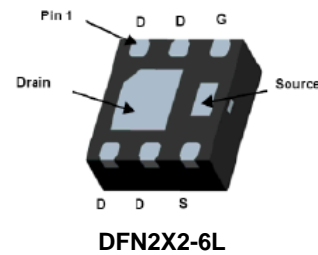
- PWM applications
- Load switch
- Battery charge in cellular handset



Schematic diagram



Pin assignment



Ordering Information

Part Number	Marking	Case	Packaging
1216D2	1216	DFN2*2-6L	3000pcs/Reel

Absolute maximum ratings ($T_C=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-12	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current-Continuous	I_D	-16	A
Drain Current -Pulsed (Note 1)	I_{DM}	-65	A
Maximum Power Dissipation	P_D	18	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

Thermal Characteristic

Thermal Resistance, Junction-to-Case (Note 2)	$R_{\theta JC}$	6.9	$^{\circ}C/W$
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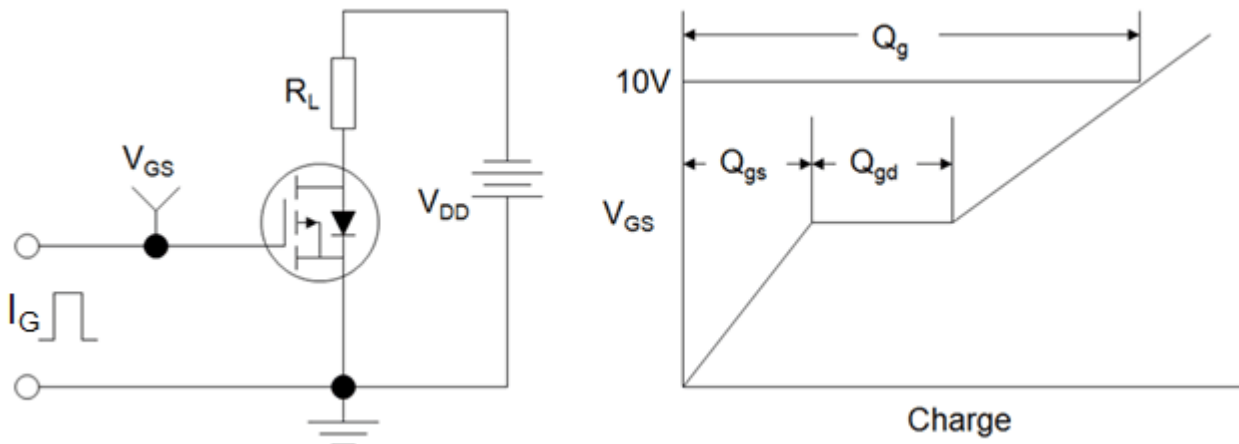
Electrical characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-12	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-12V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.6	-1	-1.2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-1A	-	12.7	21	mΩ
		V _{GS} =-2.5V, I _D =-1A	-	19	27	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-6.7A	20	-	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, F=1.0MHz	-	2700	-	PF
Output Capacitance	C _{oss}		-	680	-	PF
Reverse Transfer Capacitance	C _{rss}		-	590	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-10V, I _D =-1A V _{GS} =-4.5V, R _{GEN} =10Ω	-	11	-	nS
Turn-on Rise Time	t _r		-	35	-	nS
Turn-Off Delay Time	t _{d(off)}		-	30	-	nS
Turn-Off Fall Time	t _f		-	10	-	nS
Total Gate Charge	Q _g	V _{DS} =-6V, I _D =-10A, V _{GS} =-4.5V	-	35	48	nC
Gate-Source Charge	Q _{gs}		-	5	-	nC
Gate-Drain Charge	Q _{gd}		-	10	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =-8A	-	-	-1	V
Diode Forward Current (Note 2)	I _S		-	-	-16	A

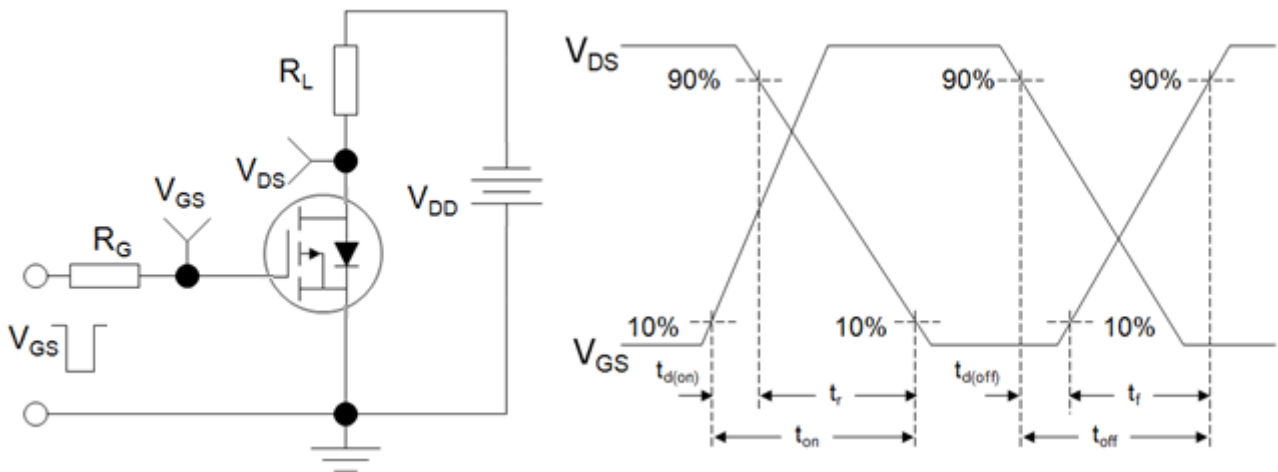
Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

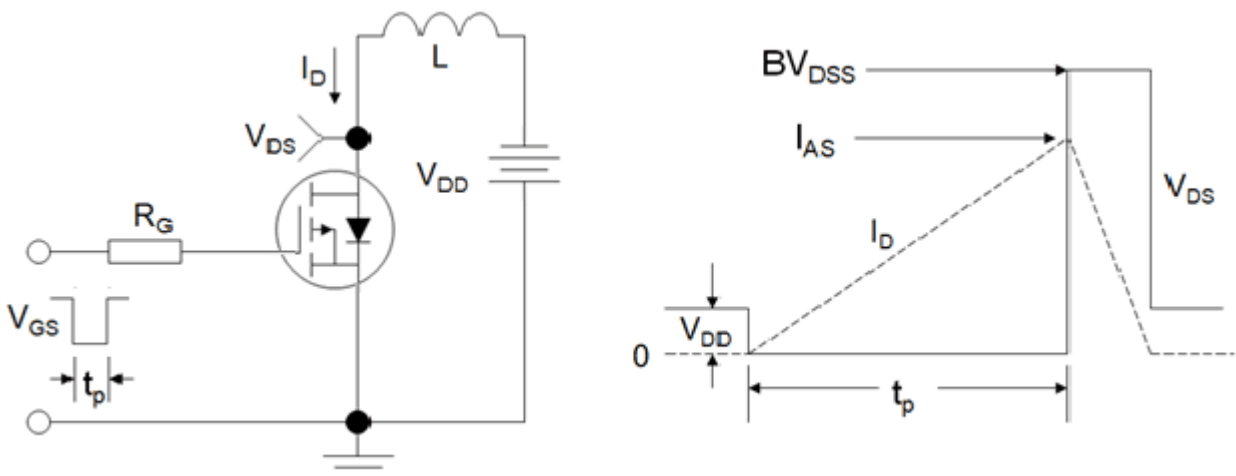
Gate Charge Test Circuit

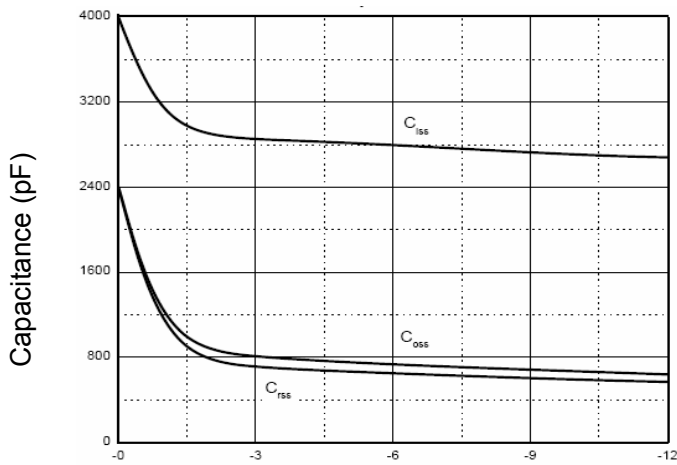


Switch Time Test Circuit

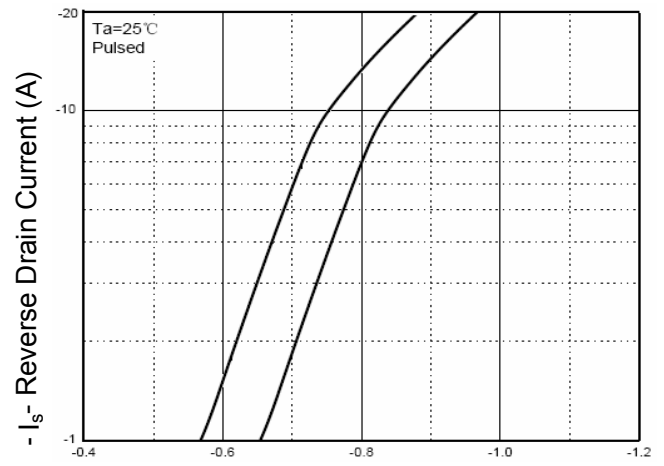


EAS Test Circuit



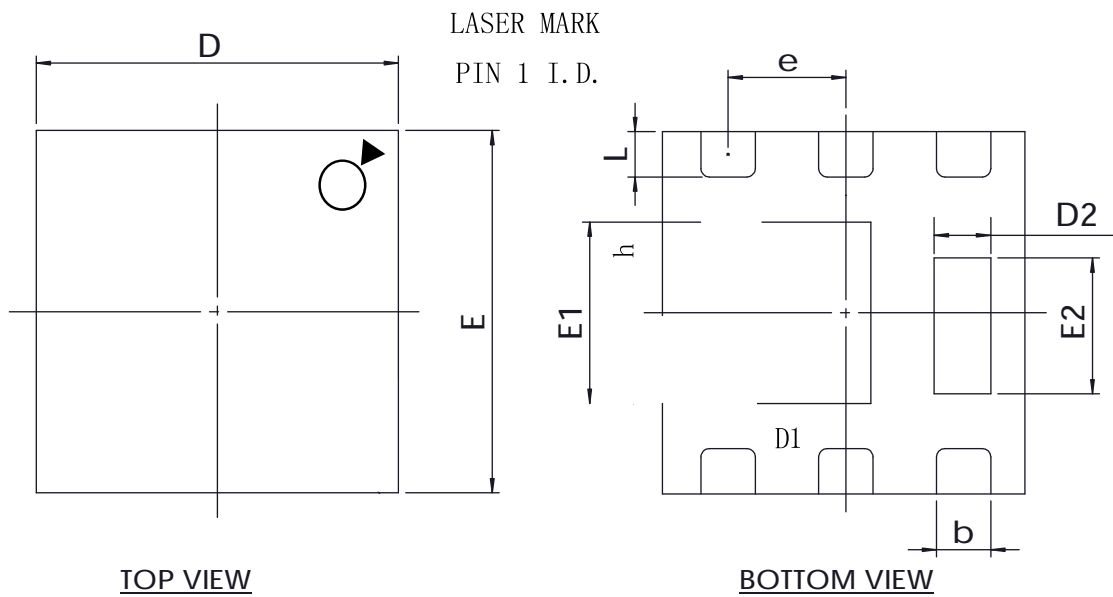


- Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



- Vsd Source-Drain Voltage (V)
Figure 8 Source- Drain Diode Forward

Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	NA	0.02	0.05
b	0.20	0.27	0.34
c	0.18	0.20	0.25
D	1.95	2.00	2.07
E	1.95	2.00	2.07
D1	0.80	0.90	1.00
E1	0.90	1.00	1.10
D2	0.20	0.30	0.40
E2	0.65	0.75	0.85
L	0.20	0.25	0.35
h	0.20	0.25	0.30
e	0.65BSC		

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