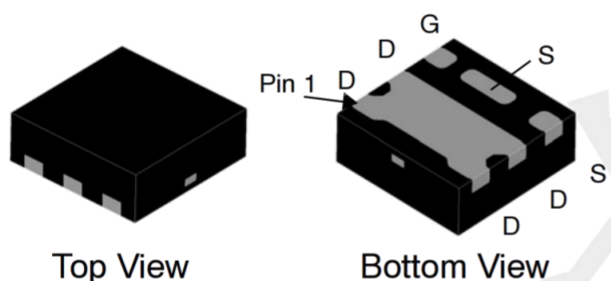


Product Summary

- V_{DS} 20 V
- I_{DS} ($V_{GS}=4.5V$) 6.5 A
- $R_{DS(ON)}$ ($V_{GS}=4.5V$) $\leq 22m\Omega$
- ESD protected gate typical

Package and Pin Configuration

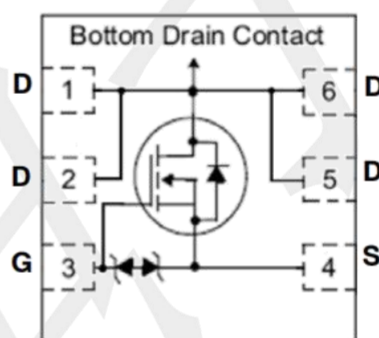


DFN1616-6

Application

- Interfacing Switching
- DC-DC Converters
- Power management functions

Circuit diagram



Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current $T_A=25^\circ C$	I_D	6.5	A
Pulsed Drain Current ($t = 100 \mu s$)	I_{DM}	30	A
Maximum Power Dissipation	P_D	2.1	W
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ C$

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient($t \leq 10s$)	$R_{\theta JA}$	70	$^\circ C/W$

Note : Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Characteristics						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=10\mu A$	BV_{DSS}	20	--	--	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.45	0.7	1.0	V
Gate-Source Leakage	$V_{DS}=0V, V_{GS}=\pm 12V$	I_{GSS}	--	--	± 10	μA
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{DSS}	--	--	1.0	μA
Drain-Source On-State Resistance (Note 1)	$V_{GS}=4.5V, I_D=6.5A$	$R_{DS(on)}$	--	18	22	m Ω
	$V_{GS}=2.5V, I_D=5.5A$		--	22	30	
	$V_{GS}=1.8V, I_D=5.0A$		--	30	40	
Forward Transconductance (Note 2)	$V_{DS}=5V, I_D=6.5A$	g_{fs}	--	7	--	S
Dynamic (Note 2)						
Input Capacitance	$V_{DS}=10V, V_{GS}=0V,$ $F=1.0MHz$	C_{iss}	--	1160	--	pF
Output Capacitance		C_{oss}	--	200	--	
Reverse Transfer Capacitance		C_{rss}	--	140	--	
Switching						
Turn-On Delay Time (Note 3)	$V_{DS}=10V,$ $V_{GS}=4.5V,$ $I_D=1A,$ $R_G=3\Omega.$	$t_{d(on)}$	--	6.5	--	nS
Rise Time (Note 3)		t_r	--	13	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	50	--	
Fall Time (Note 3)		t_f	--	30	--	
Total Gate Charge	$V_{DS}=10V,$ $I_D=6.5A,$ $V_{GS}=4.5V$	Q_g	--	10	--	nC
Gate Source Charge		Q_{gs}	--	2.3	--	
Gate Drain Charge		Q_{gd}	--	3.1	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	$V_{GS}=0V, I_F=1A$	V_{SD}	--	0.8	1.1	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	6.5	A
Pulsed Current (Note 1)		I_{SM}	--	--	30	A

Notes:

1. Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS

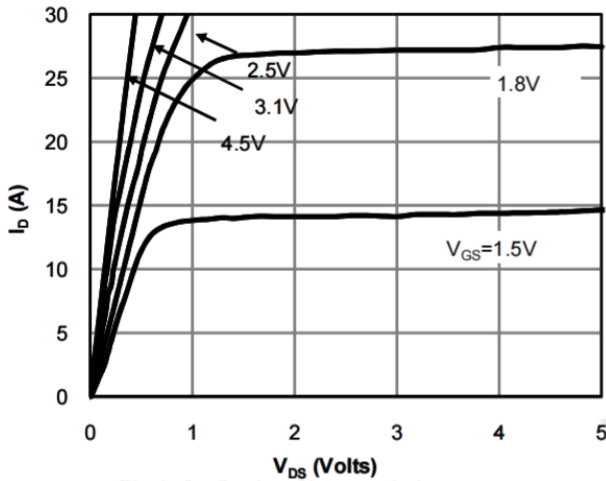


Fig 1: On-Region Characteristics

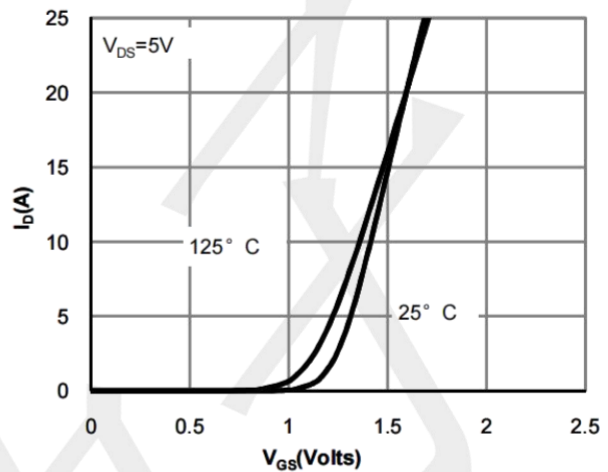


Figure 2: Transfer Characteristics

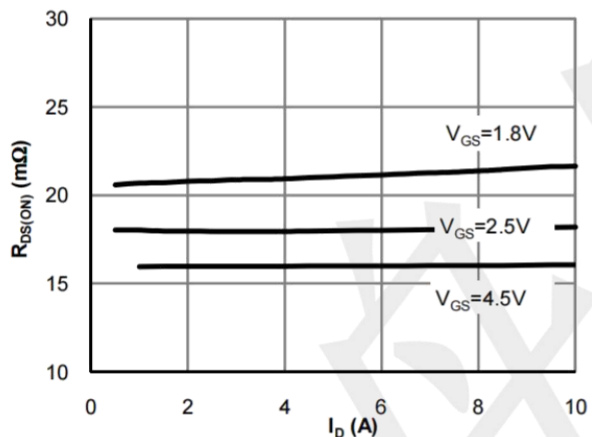


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

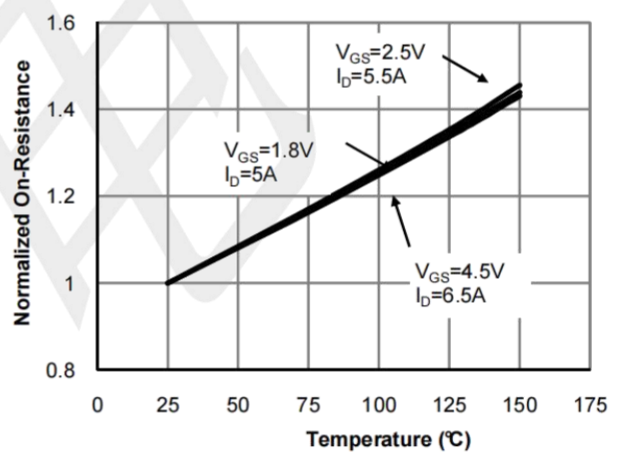


Figure 4: On-Resistance vs. Junction Temperature

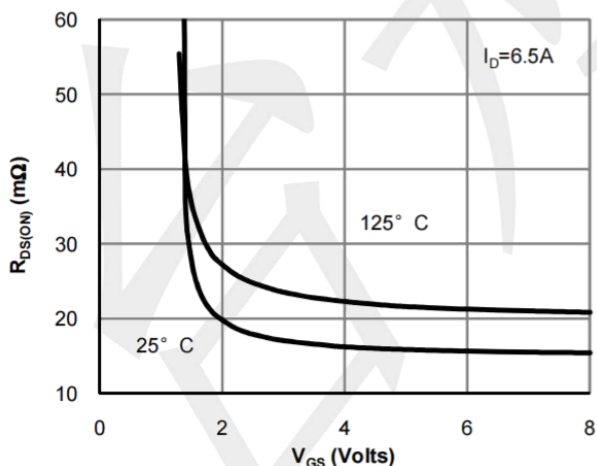


Figure 5: On-Resistance vs. Gate-Source Voltage

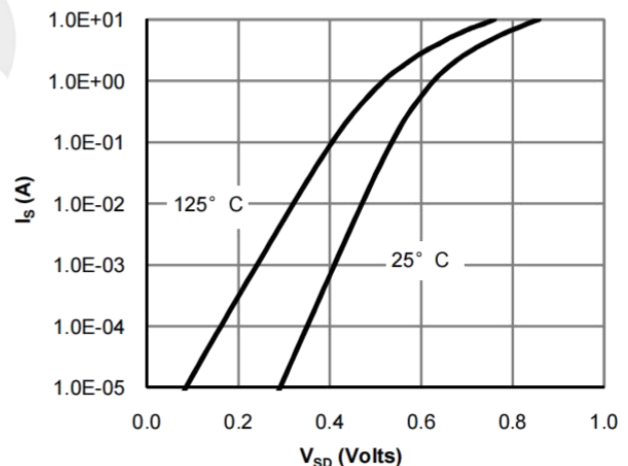
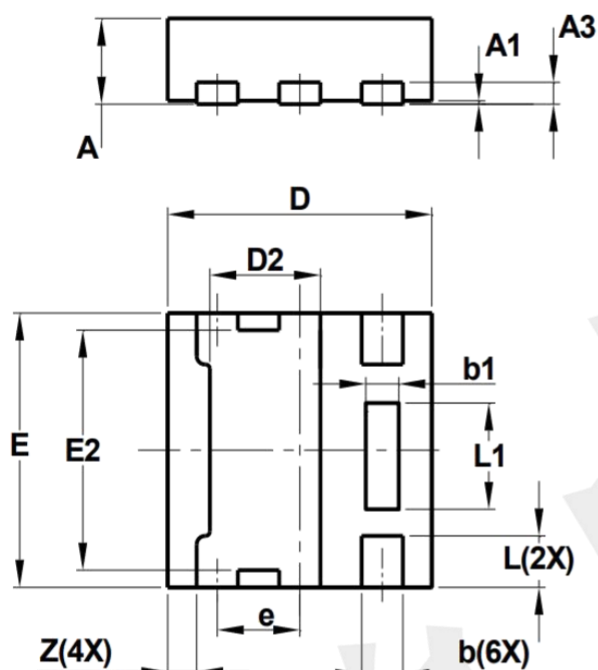


Figure 6: Body-Diode Characteristics

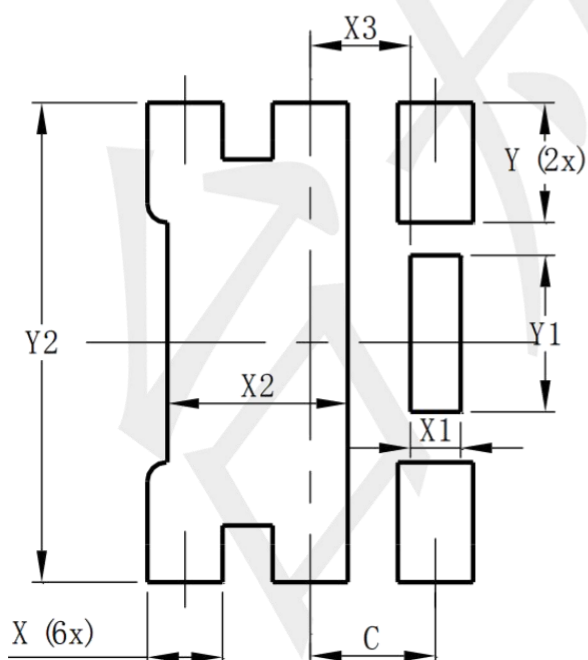
Package Outline Dimensions

DFN1616-6 & DFN-6(1.6X1.6)



DFN1616-6 Type E			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.02
A3	—	—	0.13
b	0.20	0.30	0.25
b1	0.10	0.30	0.20
D	1.55	1.65	1.60
D2	0.57	0.77	0.67
E	1.55	1.65	1.60
E2	1.30	1.50	1.40
e	—	—	0.50
L	0.25	0.35	0.30
L1	0.52	0.72	0.62
Z	—	—	0.175
All Dimensions in mm			

Mounting Pad Layout



Dimensions	Value (in mm)
C	0.500
X	0.300
X1	0.200
X2	0.720
X3	0.400
Y	0.475
Y1	0.620
Y2	1.900