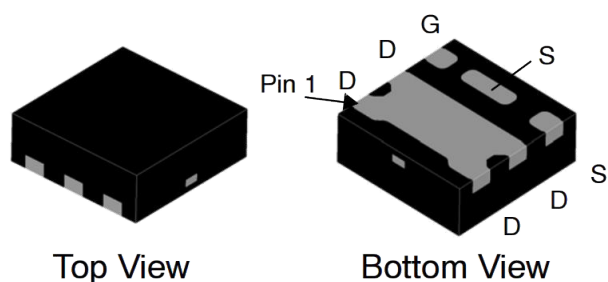


N-CHANNEL ENHANCEMENT MODE MOSFET

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 $\pm 6kV$

Package and Pin Configuration

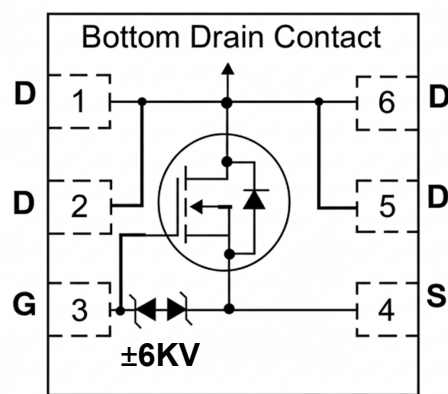


DFN1616-6

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.

**N-CHANNEL ENHANCEMENT MODE MOSFET****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 = 10μA	BV _{DSS}	20	--	--	V
Gate-Source Threshold Voltage	V _{DS} =V _{GS} , I _D = 250μA	V _{GS(th)}	0.45	0.7	1.0	V
Gate-Source Leakage	V _{DS} =0V, V _{GS} = ±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	mΩ
	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 = 3Ω.	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

N-CHANNEL ENHANCEMENT MODE MOSFET

TYPICAL CHARACTERISTICS

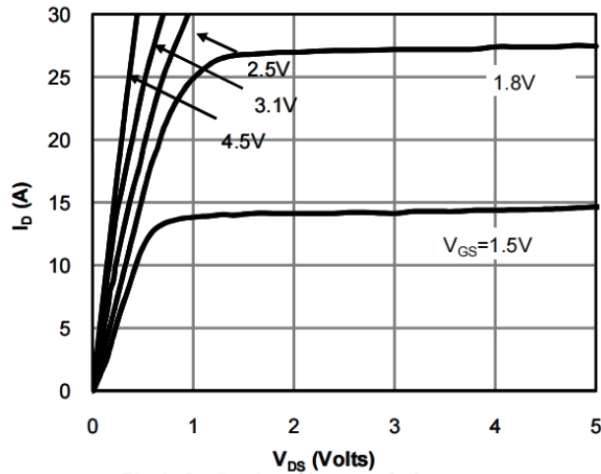


Fig 1: On-Region Characteristics

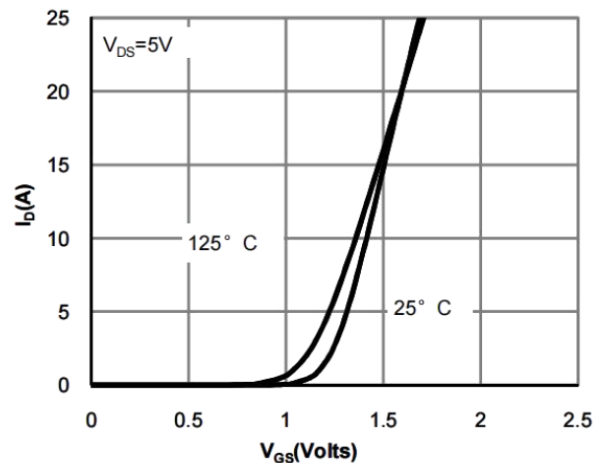


Figure 2: Transfer Characteristics

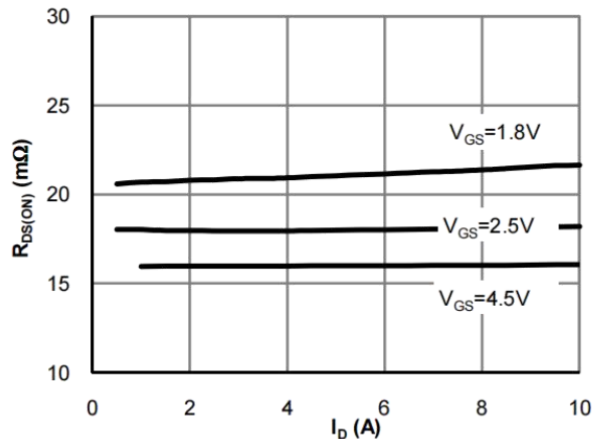


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

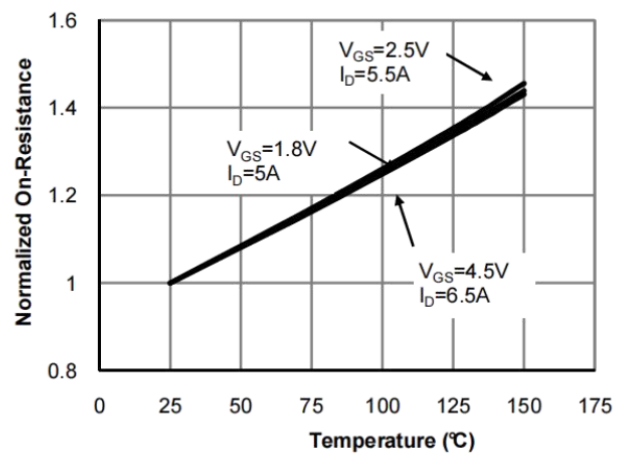


Figure 4: On-Resistance vs. Junction Temperature

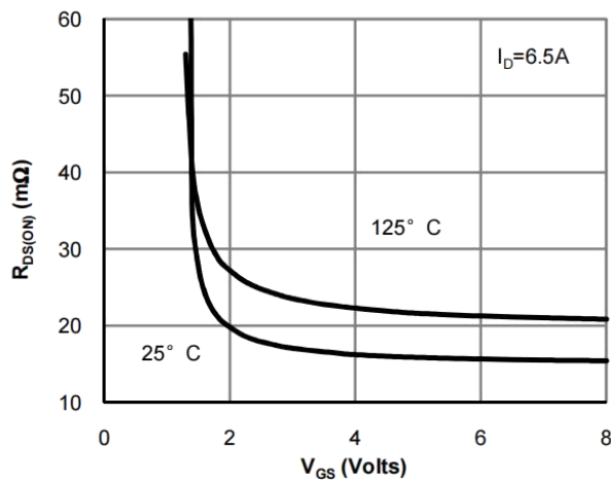


Figure 5: On-Resistance vs. Gate-Source Voltage

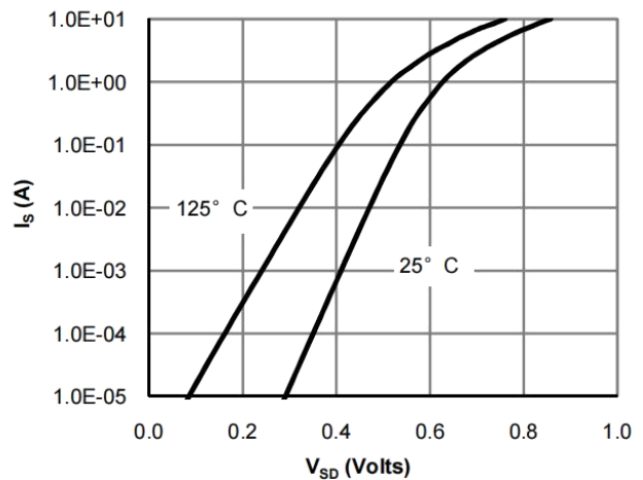
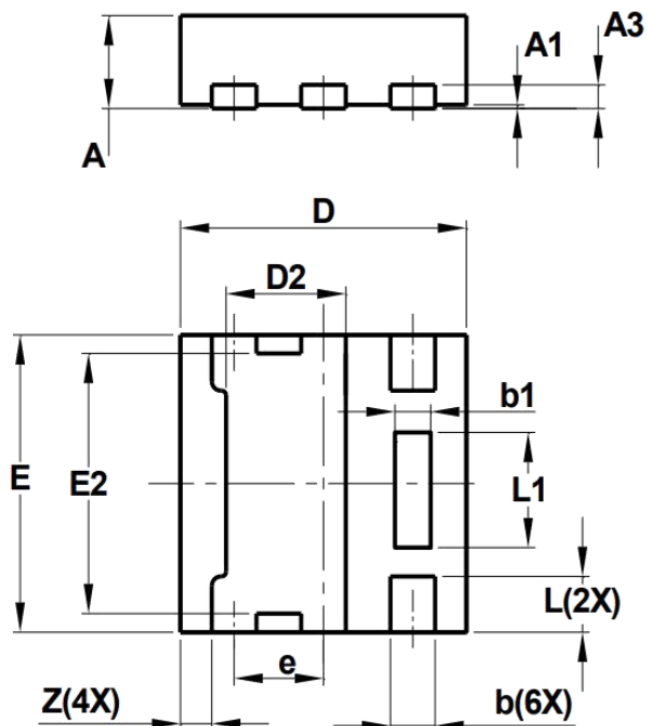


Figure 6: Body-Diode Characteristics

N-CHANNEL ENHANCEMENT MODE MOSFET

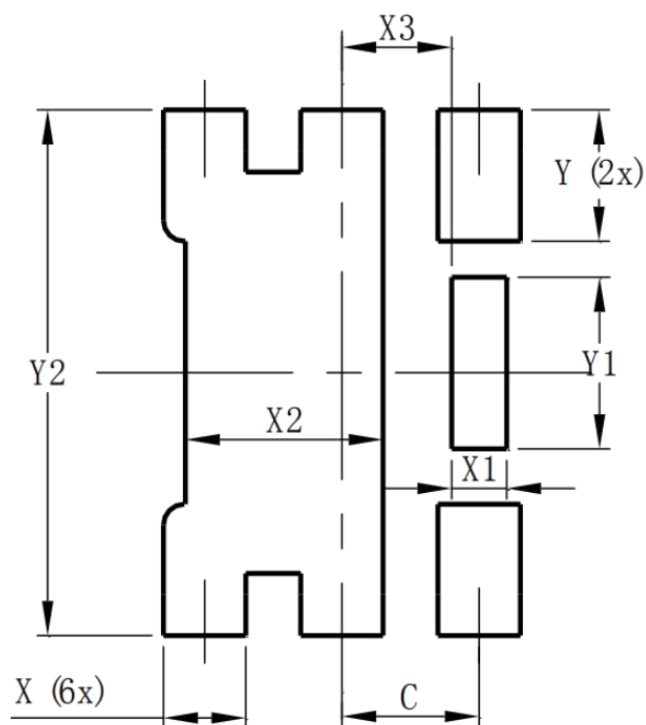
Package Outline Dimensions

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