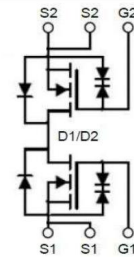


Features

- 18V,10A
 $R_{DS(on)} < 8.0m\Omega @ V_{GS}=4.5V$ TYP:5.2m Ω
 $R_{DS(on)} < 9.0m\Omega @ V_{GS}=2.5V$ TYP:6.7m Ω
- Advanced Trench Technology
- Lead free product is acquired
- ESD >2KV

Applications

- PWM applications
- Load Switch
- Power management



Schematic Diagram



Marking and pin Assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
12N018	AP12N018EQD	DFN2X3	-	-	5000

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	18	V
Gate-Source Voltage	V _{GS}	±10	V
Continuous Drain Current (T _c =25°C) ⁽¹⁾	I _D	10	A
Pulsed Drain Current ⁽¹⁾	I _{DM}	40	A
Drain Power Dissipation	P _D	2.6	W
Thermal Resistance from Junction to Ambient ⁽²⁾	R _{θJA}	48.26	°C/W
Thermal Resistance from Junction to Case	R _{θJC}	2.5	°C/W
Junction Temperature	T _J	-55~ +150	°C
Storage Temperature	T _{STG}	-55~ +150	°C

Notes:

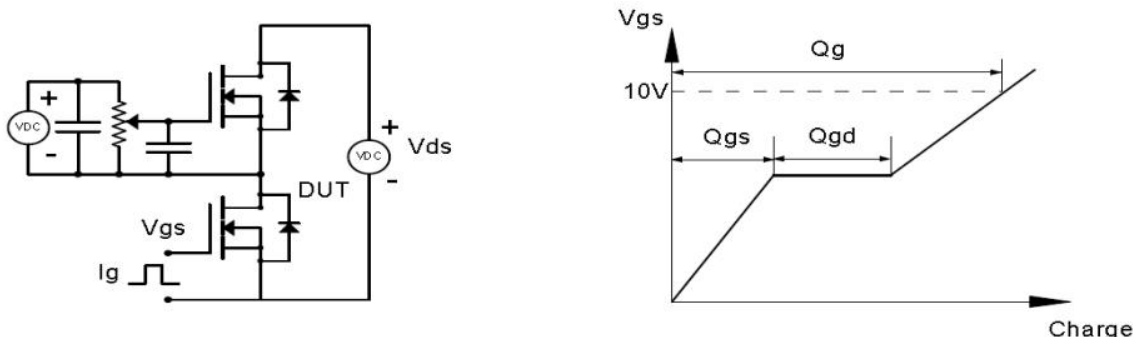
- 1) Repetitive Rating: pulse width limited by maximum junction temperature
- 2) The value of R_{θJA} Mounted on FR4 Board (25.4mm*25.4mm*t1.6mm) With 2oz Copper TA=25°C

MOSFET ELECTRICAL CHARACTERISTICS(T_J=25°C unless otherwise noted)

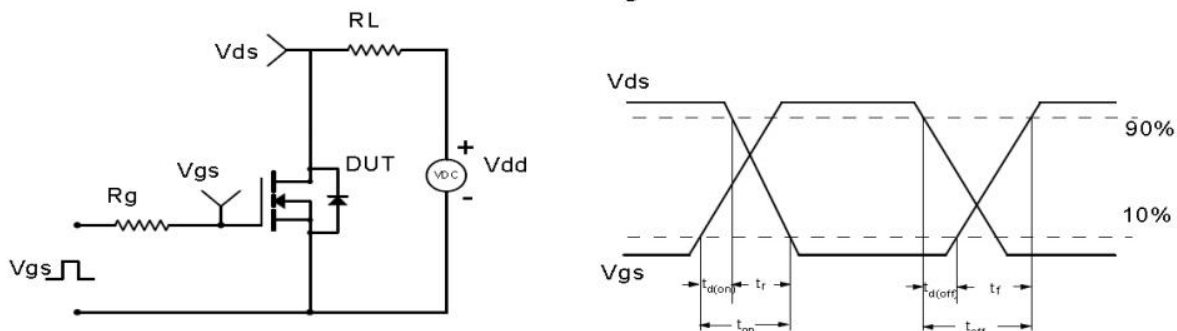
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	18	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =18V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±10V, V _{DS} = 0V	-	-	±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5	0.7	0.9	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =3A	-	5.2	8.0	mΩ
		V _{GS} =2.5V, I _D =3A	-	6.7	9.0	mΩ
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =9V, V _{GS} =0V, f=1MHz	-	823	-	pF
Output Capacitance	C _{oss}		-	159	-	
Reverse Transfer Capacitance	C _{rss}		-	145	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =9V, I _D =3A, R _G =3.0Ω, V _{GS} =4.5V	-	741	-	nS
Turn-on rise time	t _r		-	448	-	
Turn-off delay time	t _{d(off)}		-	578	-	
Turn-off fall time	t _f		-	232	-	
Total Gate Charge	Q _g	V _{DS} =10V, I _D =7A, V _{GS} =4.5V	-	14.4	-	nC
Gate-Source Charge	Q _{gs}		-	2.16	-	
Gate-Drain Charge	Q _{gd}		-	4.4	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	T _J =25°C, V _{GS} =0V, I _S =3A	-	0.8	1.2	V
Diode Forward current	I _S	T _C =25°C	-	-	10	A

Test Circuit & Waveform

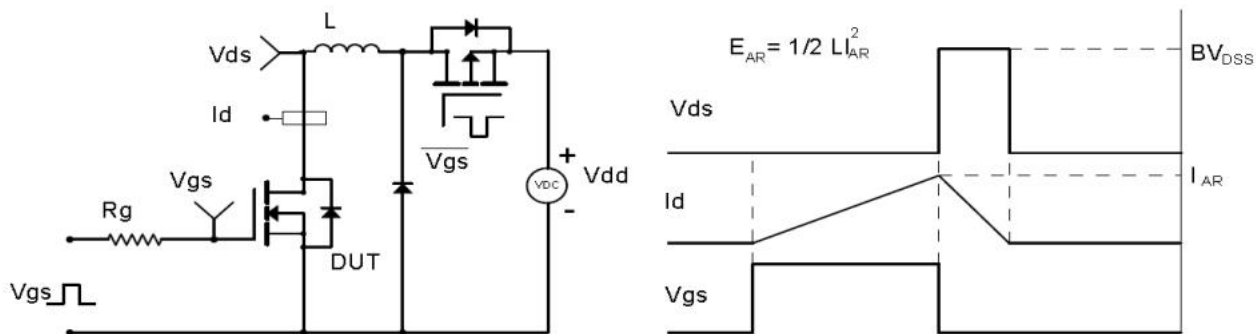
Gate Charge Test Circuit & Waveform



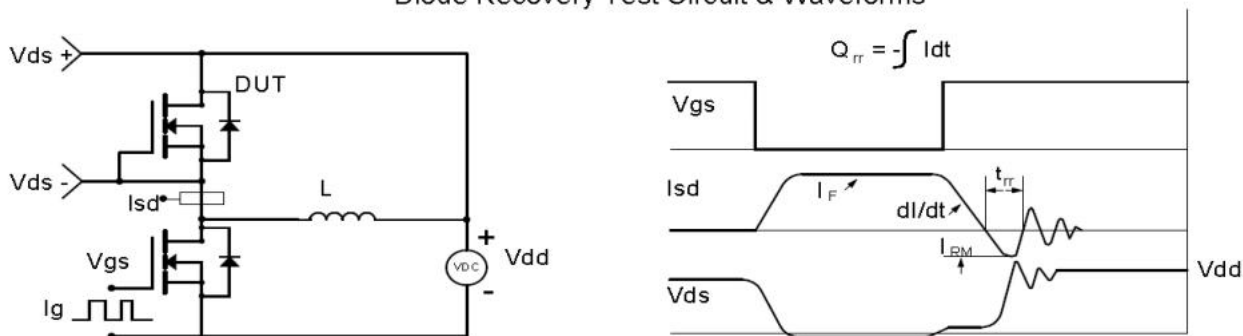
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Characteristics

Figure 1. Output Characteristics

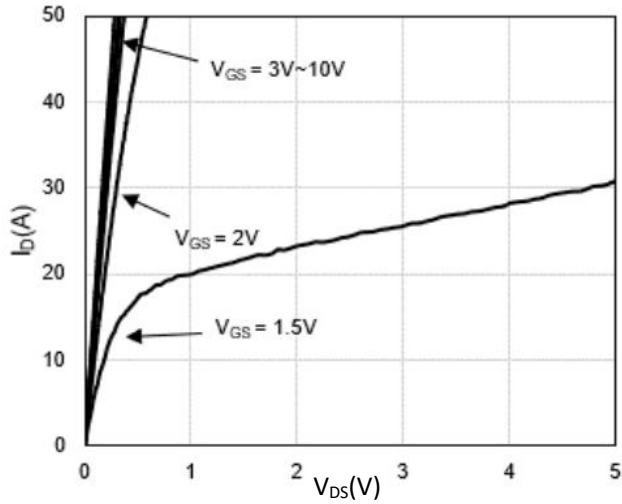


Figure 2. Transfer Characteristics

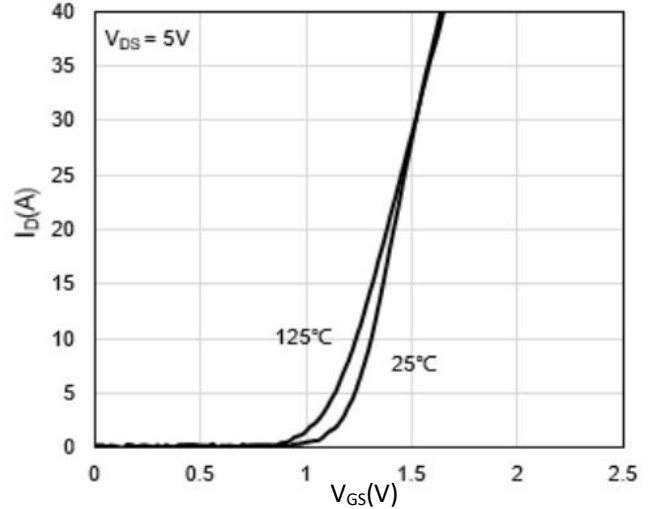


Figure 3. On-Resistance Variation vs. Drain Current

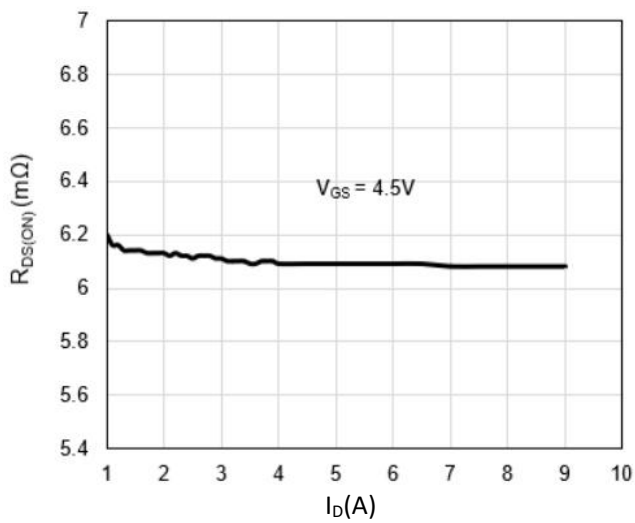


Figure 4. On-Resistance vs. Gate to Source Voltage

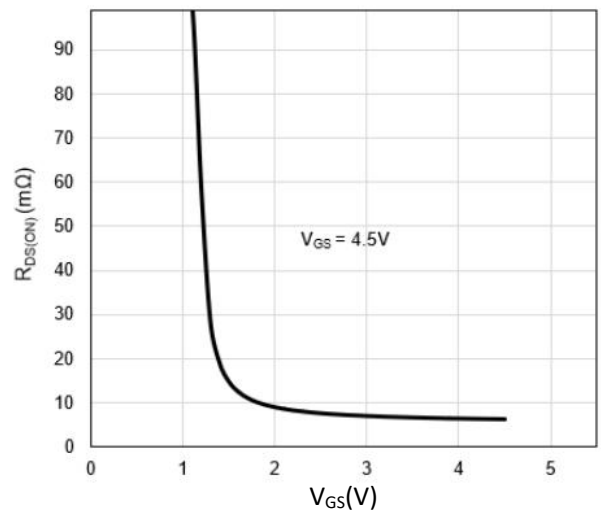


Figure 5. Capacitance Characteristics

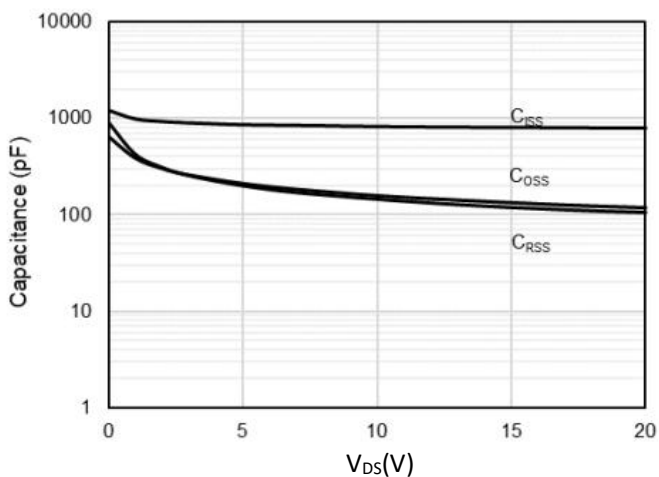
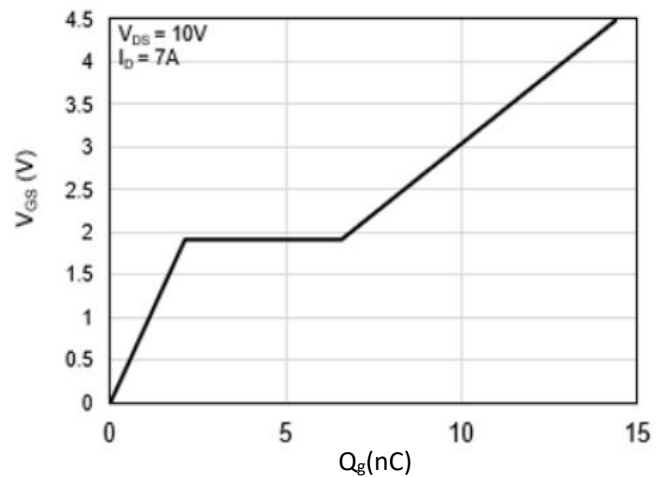


Figure 6. Gate Charge Characteristics



Typical Characteristics

Figure 7. Body-Diode Characteristics

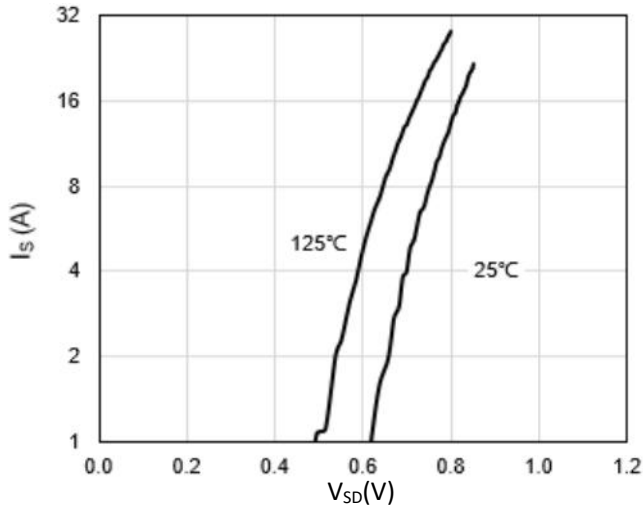


Figure 8. On-Resistance Variation vs Temperature

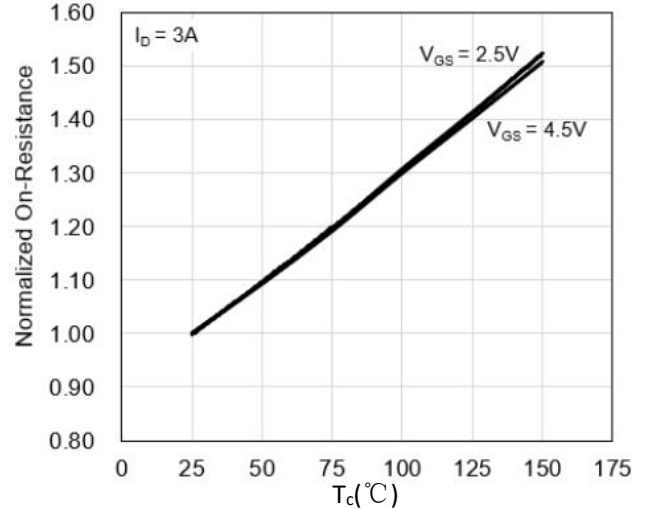


Figure 9. Power Dissipation

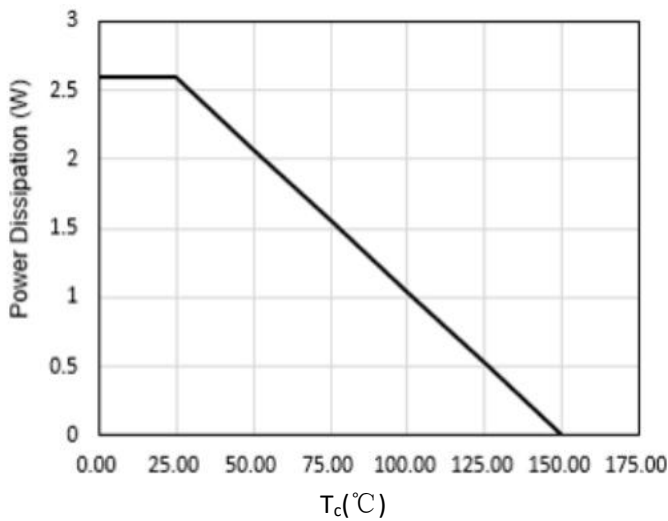


Figure 10. Drain Current Derating

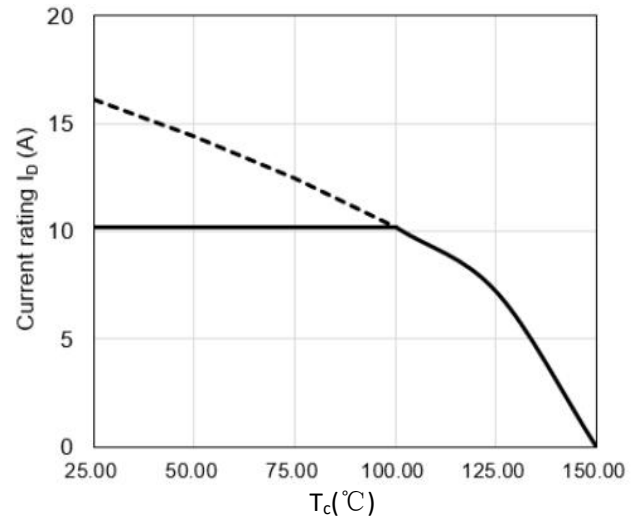


Figure 11. Capacitance Characteristics

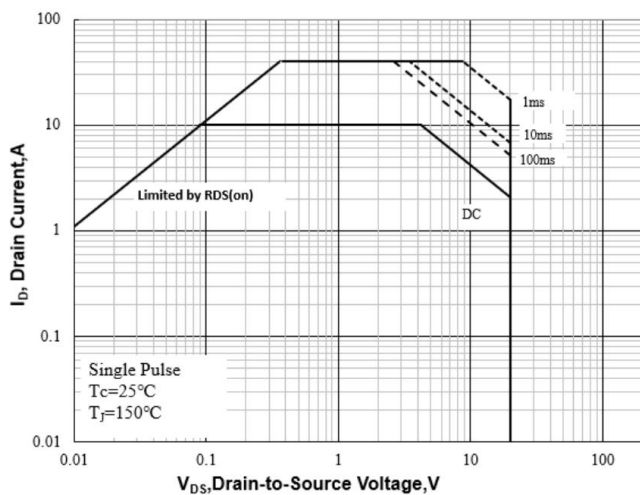
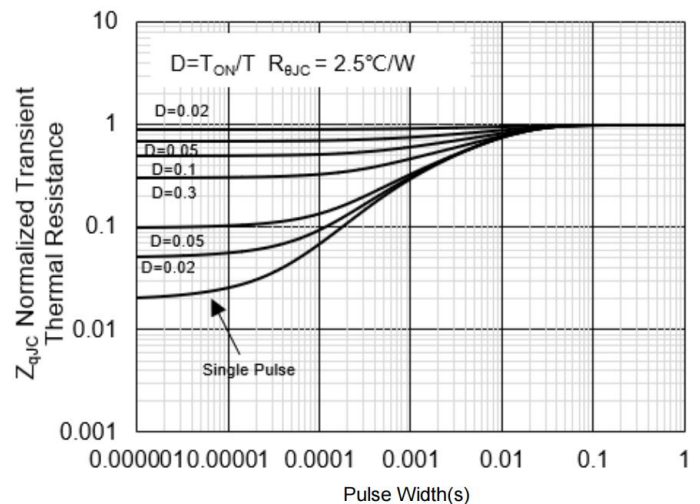
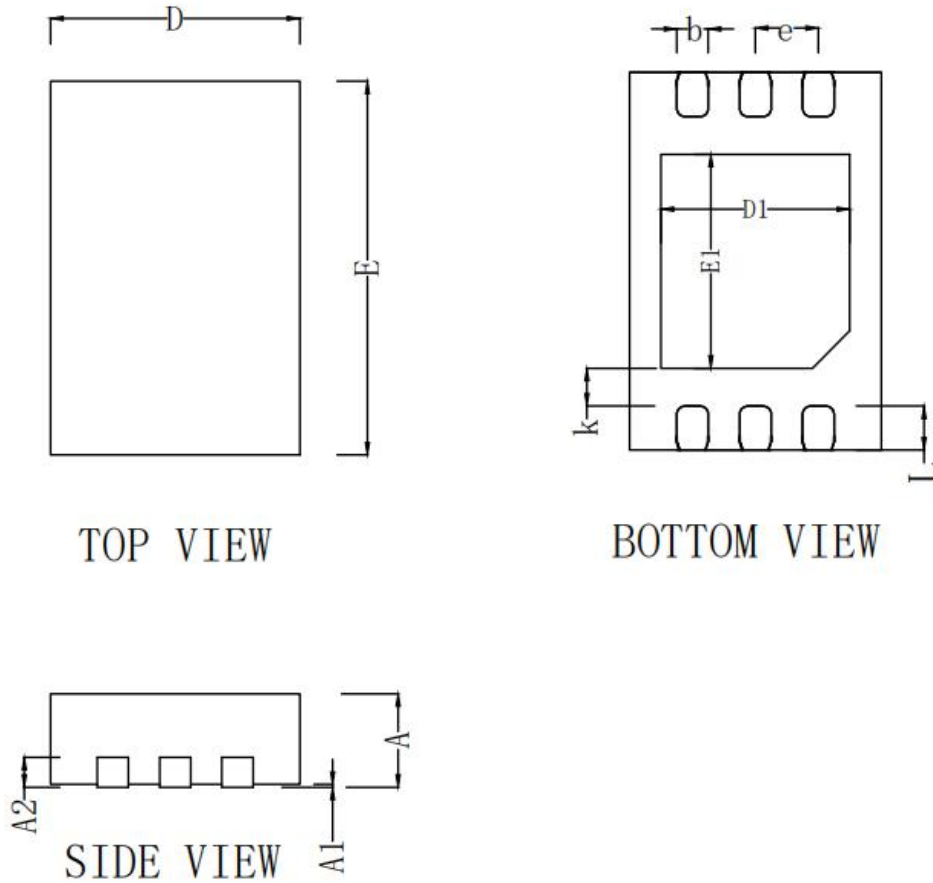


Figure 12. Gate Charge Characteristics



PDFN2X3 Package Information



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.203 REF		
b	0.20	0.25	0.30
D	1.90	2.00	2.10
E	2.90	3.00	3.10
e	0.500 BSC		
D1	1.45	1.50	1.55
E1	1.65	1.70	1.75
k	0.25	0.30	0.35
L	0.30	0.35	0.40

Revision History

Revision	Release	Remark
V1.0	2024/07/16	Initial Release

Disclaimer

The information given in this document describes the independent performance of the product, but similar performance is not guaranteed under other working conditions, and cannot be guaranteed when installed with other products or equipment. To achieve the required performance of the product in actual scenarios, the customer should conduct a complete application test to assess the functionality of the product.

Allpower assumes no responsibility for equipment failures result from using products at values that exceed the ratings, operating conditions, or other parameters listed in the product specifications.

The product described in this specification is not applicable for aerospace or other applications which requires high reliability. Customers using or selling these products for use in medical, life-saving, or life-sustaining applications do so at their own risk and agree to fully indemnify.

Due to product or technical improvements, the information described or contained herein may be changed without prior notice.