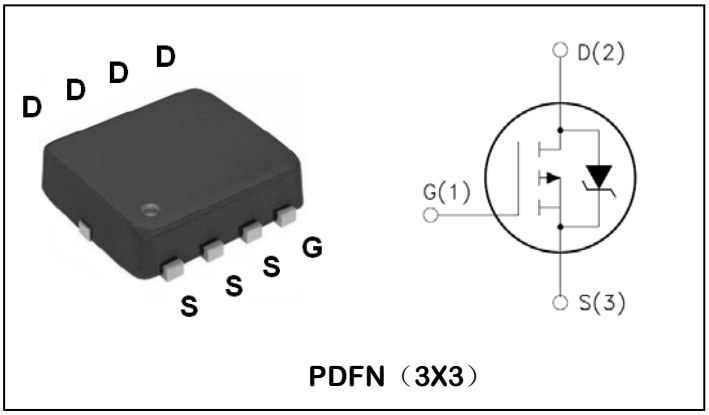
P-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
-30V	-40A	10mΩ



PDFN（3X3）

Features:

- Low Gate Charge for Fast Switching Application
- Low $R_{DS(ON)}$ to Minimize Conductive Loss
- Reliable and Rugged

Absolute Maximum Ratings (T_A = 25°C unless otherwise specifed)

Symbol	Parameter		Ratings	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to150	°C
I_S	Diode Continuous Forward Current	T_C =25°C	-40	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested (2)	T_C=25°C, V_{GS}=-10V	-120	A
I_D	Continuous Drain Current (1)	T_C=25°C, V_{GS}=-10V	-40	A
		T_C=100°C V_{GS}=-10V	-26	A
P_D	Maximum Power Dissipation	T_C=25°C	25.6	W

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max (1)	4.9	°C/W
R_{thJA}	Thermal resistance junction-ambient max (1)	62	°C/W

Electrical Characteristics (TA=25°C Unless Otherwise Noted)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
On/off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250uA	-30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -27V, V_{GS}=0V T_J=25°C	--	--	-1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250uA	-1.0	-1.6	-2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
$R_{DS(ON)}$	Drain-SourceOn-stateResistance(2)	V_{GS}= -10V, I_{DS}=-20A	--	7.5	10	mΩ
		V_{GS}= -4.5V, I_{DS}=-10A	--	11.6	16	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= -15V, Frequency=1.0MHz	--	3564	--	pF
C_{oss}	Output Capacitance		--	416	--	
C_{rss}	Reverse Transfer Capacitance		--	373	--	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time(1)	V_{DD}=-15V, I_D= -20A, V_{GS}= -10V, R_{GEN}=2.5Ω	--	16	--	ns
t_r	Turn-on Rise Time(1)		--	21	--	
$t_{d(OFF)}$	Turn-off Delay Time(1)		--	68	--	
t_f	Turn-off Fall Time(1)		--	52	--	
Q_g	Total Gate Charge(1)	V_{DS}=-15V, V_{GS}= -10V, I_{DS}=-20A	--	37	--	nC
Q_{gs}	Gate-Source Charge(1)		--	6.5	--	
Q_{gd}	Gate-Drain Charge(1)		--	9.4	--	
Avalanche Characteristics						
EAS	Single Pulse Avalanche Energy (3)	V_{DD}=-15V,L=0.5mH ,V_{GS}=10V,R_g=25Ω, V_{GS}=-10V	121	--	--	mJ
Diode Characteristics						
V_{SD}	Diode Forward Voltage(2)	I_{SD}=-30A, V_{GS}=0V,T_J=25°C	--	-0.8	-1.2	V

NOTES:

1. Surface Mounted on FR4 Board, t ≤ 10 sec.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The Min. value is 100% EAS tested guarantee.

Typical Performance Characteristics

Figure1: Output Characteristics

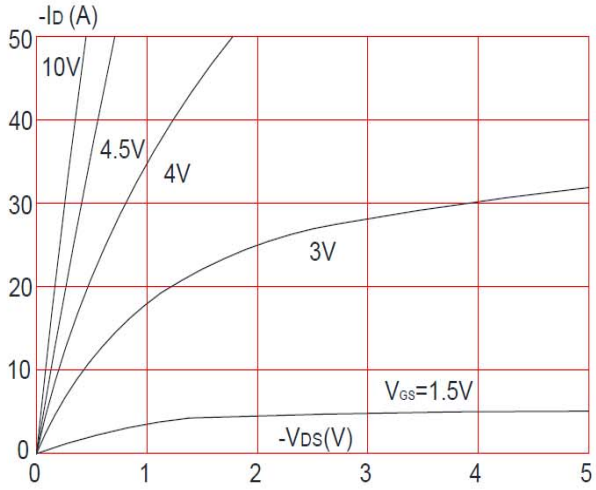


Figure 2: Typical Transfer Characteristics

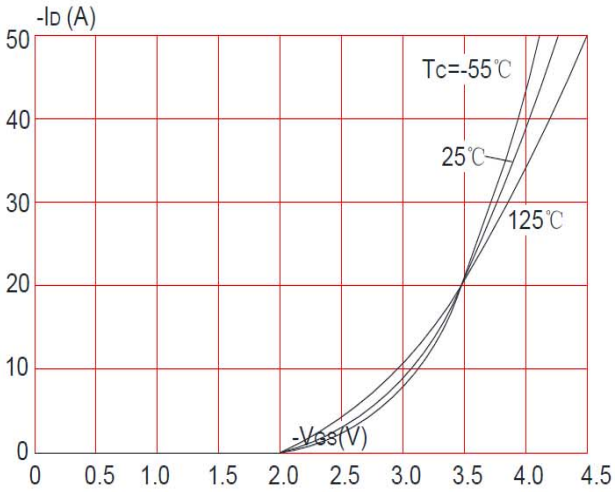


Figure 3: On-resistance vs. Drain Current

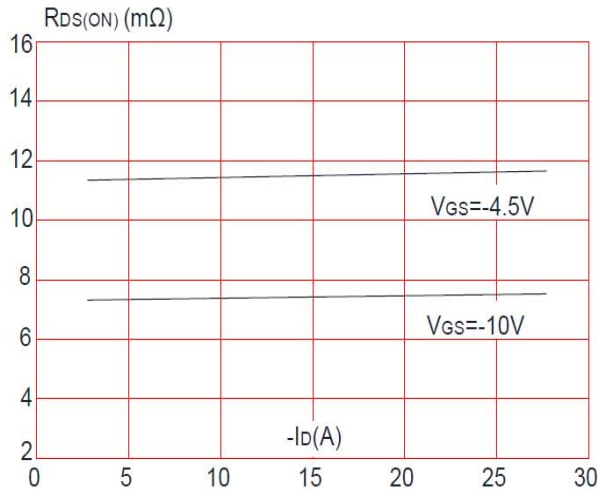


Figure 4: Body Diode Characteristics

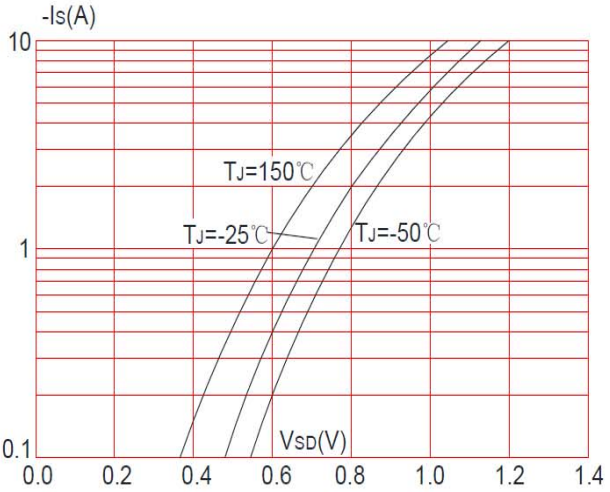


Figure 5: Gate Charge Characteristics

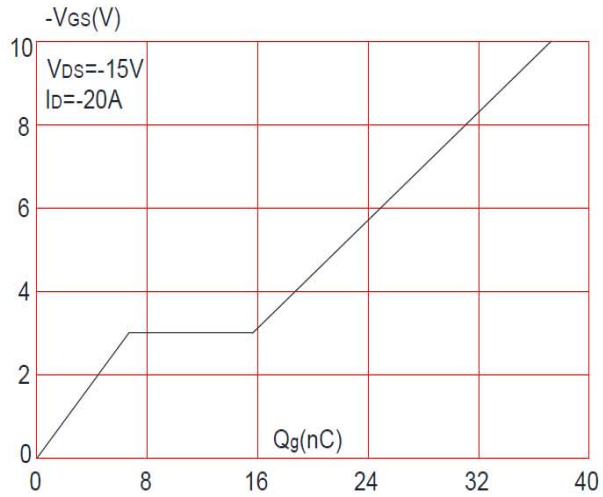


Figure 6: Capacitance Characteristics

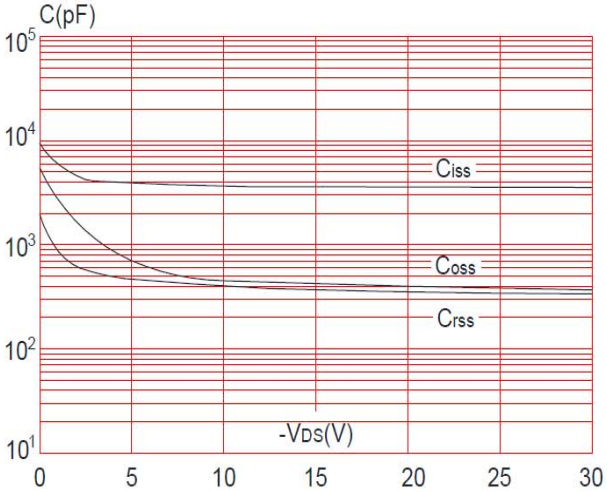


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

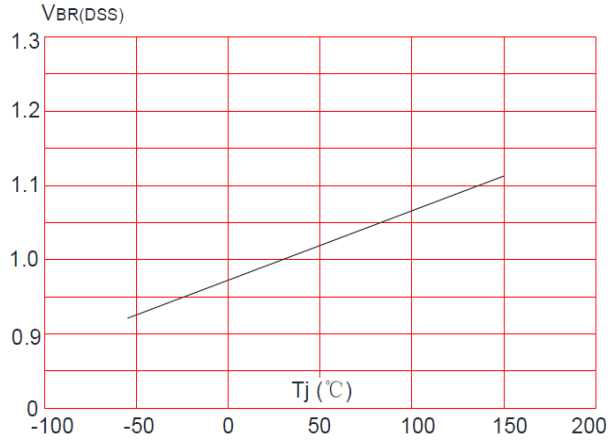


Figure 8: Normalized on Resistance vs. Junction Temperature

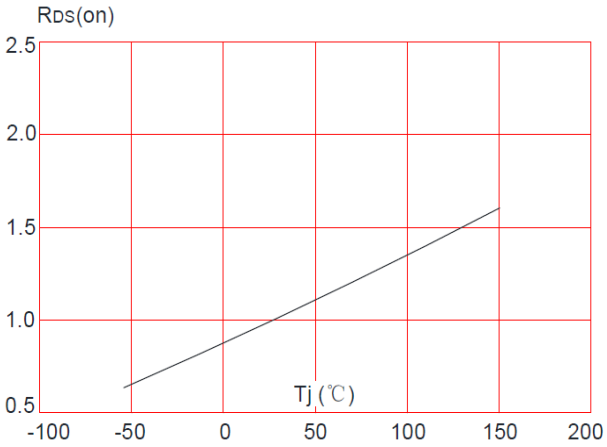


Figure 9: Maximum Safe Operating Area

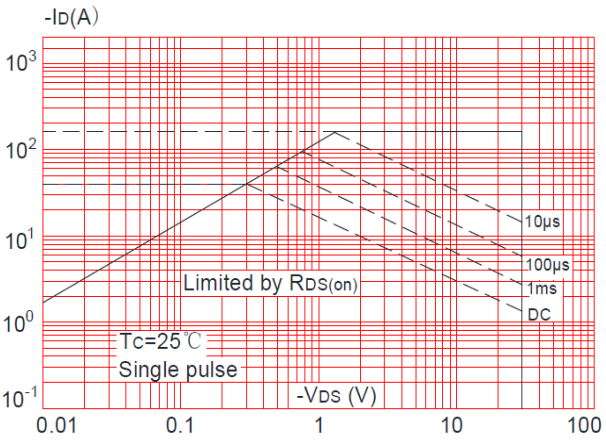


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

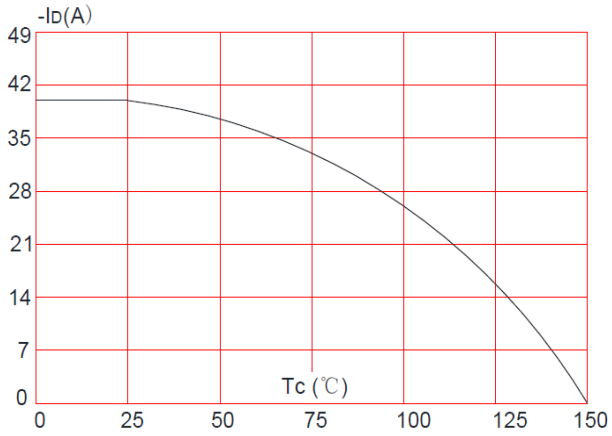
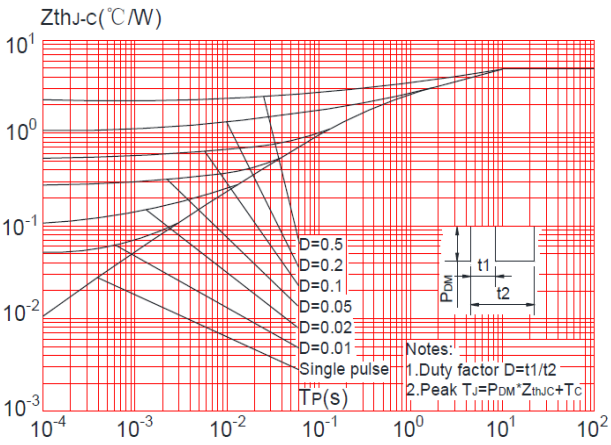
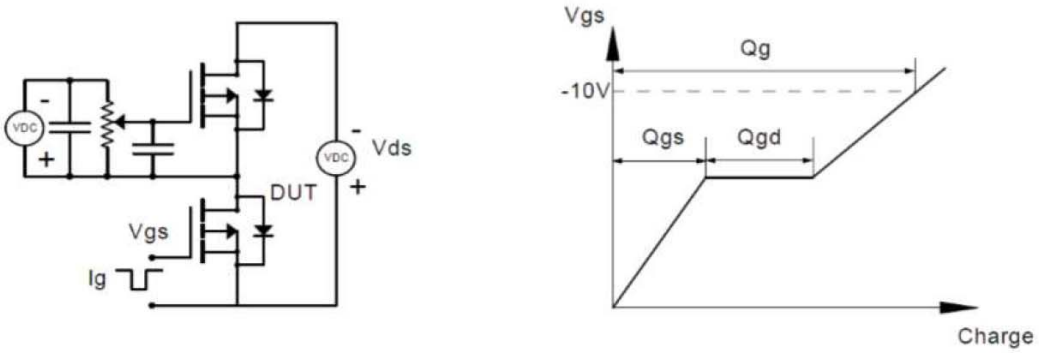


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

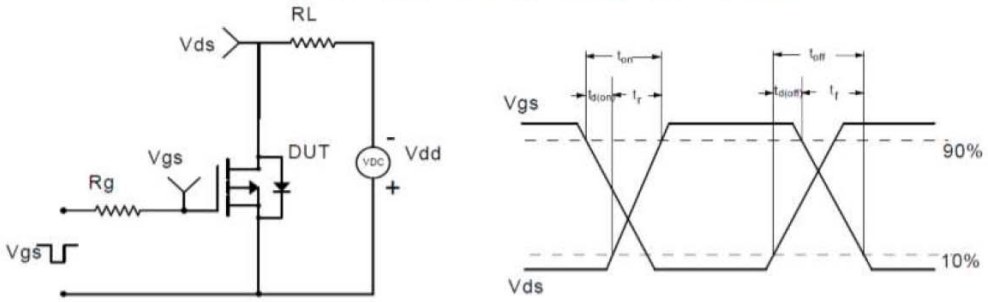


Test Circuit

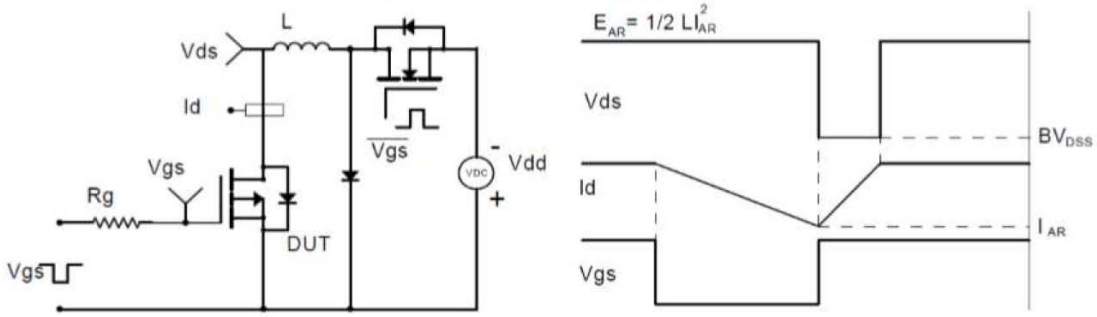
Gate Charge Test Circuit & Waveform



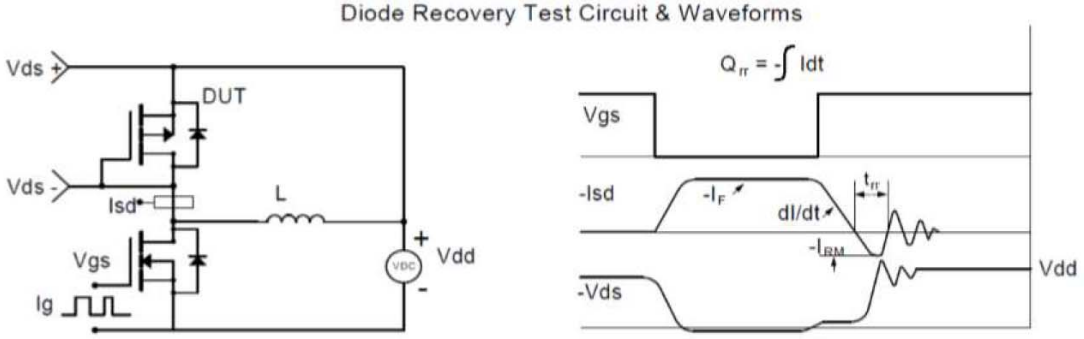
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

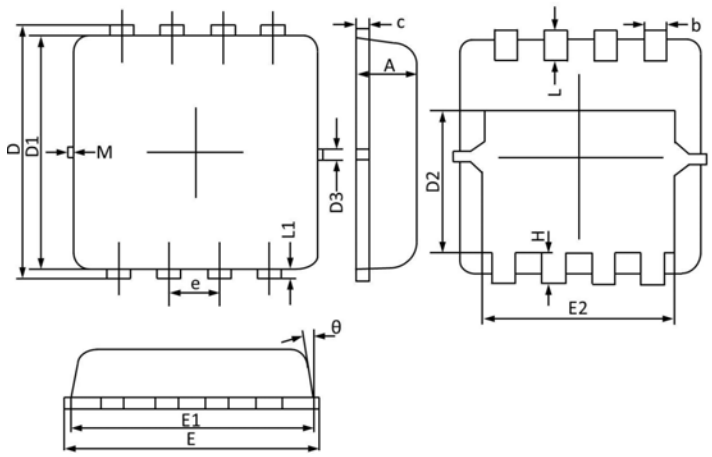


Diode Recovery Test Circuit & Waveforms



PACKAGE MECHANICAL DATA

PDFN（3X3） Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.850	0.028	0.034
b	0.200	0.400	0.008	0.016
c	0.100	0.250	0.004	0.009
D	3.150	3.450	0.124	0.135
D1	3.000	3.250	0.119	0.128
D2	1.580	1.980	0.062	0.077
D3	0.130REF		0.005REF	
E	3.150	3.450	0.124	0.135
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
H	0.300	0.500	0.011	0.019
M	0.150REF		0.006REF	
e	0.650 TYP.		0.026 TYP.	
L	0.300	0.500	0.011	0.019
L1	0.130REF		0.005REF	
θ	0°	12°	0°	12°

Making Diagram

ADM40N03Z:Part number
X:Internal control code
H:Halogen Free
Y:Year
M:Month

Ordering information

Part number	Package	Marking	Packing	Quantity
ADM40P03Z	PDFN3x3	M40P03Z	Tape&reel	5000pcs

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