

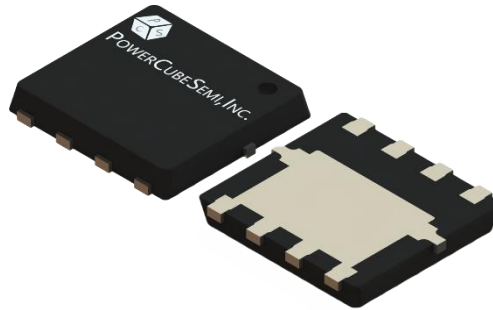
PM003N080GM

80V 100A 3.6mΩ Single N channel Trench MOSFET with Normal Diode

Features

Si Single N channel Trench MOSFET

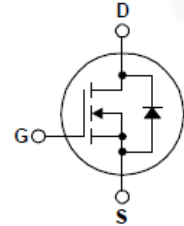
- Rated to 80V at 100Amps @ $T_j = 25^\circ\text{C}$
- Max $R_{DS(on)} = 3.6\text{ m}\Omega$
- Typ $R_{DS(on)} = 2.9\text{ m}\Omega$
- Gate Charge(Typ. $Q_g=68.5\text{ nC}$)
- 100% UIL Tested
- 100% Rg Tested



PKG type : PDFN56

Application

- Server
- General purpose Application



Description

PM003N080GM uses advanced PowerCubeSemi's MOSFET technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. PM003N080Cm is suitable device for Synchronous Rectification for server and general purpose applications.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	80	V
I_D	Drain Current	$T_c=25^\circ\text{C}$	100	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	400	A
V_{GS}	Gate-Source Voltage		± 20	V
E_{AS}	Single Pulsed Avalanche Energy	$I_{AS}=22A, V_{GS}=10V, L=1.0mH$	242	mJ
P_d	Power Dissipation	$T_c=25^\circ\text{C}$	96.2	W
T_j	Operating Junction Temperature		150	$^\circ\text{C}$
T_{stg}	Storage Temperature		-55 to 150	$^\circ\text{C}$

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM003N080GM	PM003N080	PDFN56	Tube & Reel	-	-

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	80	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 72V, V_{GS} = 0V$	-	-	1.0	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	$V_{GS} = 10V, I_D = 50A$	-	2.9	3.6	m Ω
g_{FS}	Forward Transconductance	$V_{DS} = 10V, I_D = 50A$	-	80	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DS} = 40V, I_D = 50A, V_{GS} = 10V, R_G = 3\Omega$	-	19.6	-	ns
T_r	Turn-on Rise time		-	41	-	
$t_{d(off)}$	Turn-off Delay time		-	30.3	-	
T_f	Turn-off Fall time		-	18.9	-	



Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		1.3	-	$^{\circ}\text{C}/\text{W}$
R_g	Gate resistance	$V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$	2.0	-	Ω
C_{iss}	Input capacitance	$V_{DS} = 40\text{V}$, $V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$	4630	-	pF
C_{oss}	Output capacitance		1050	-	
C_{rss}	Reverse transfer capacitance		40	-	
$Q_{g(\text{tot})}$	Total gate charge at 10V	$V_{DS} = 40\text{V}$, $I_D = 50\text{A}$ $V_{GS(\text{on})} = 10\text{V}$	68.5	-	nC
Q_{gs}	Gate to source gate charge		18.2	-	
Q_{gd}	Gate to drain "Miller" charge		15.7	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current		-	100	A
I_{SM}	Maximum pulsed drain to source diode forward current		-	400	A
V_{SD}	Drain to source diode forward voltage	$I_S = 50\text{A}$, $V_{GS} = 0\text{V}$	0.8	1.2	V
T_{rr}	Reverse recovery time	$I_F = 50\text{A}$, $V_{GS} = 0\text{V}$, $di_F/dt = 100\text{A}/\mu\text{s}$	60	-	ns
Q_{rr}	Reverse recovery charge		110	-	nC

Typical Characteristics

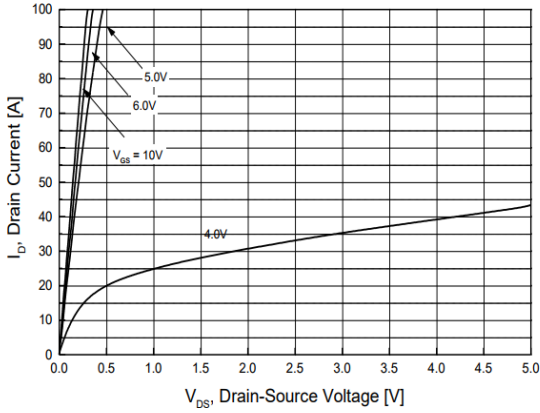


Figure 1. On-Region Characteristics

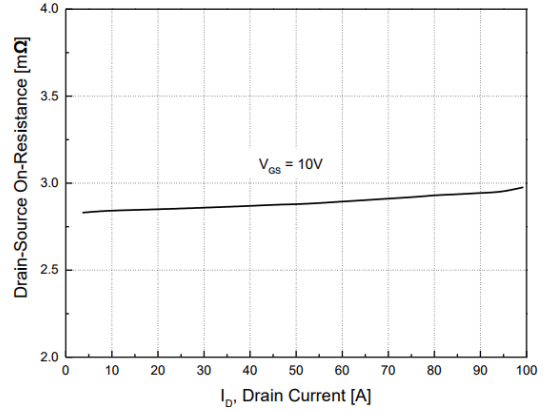


Figure 2. On-Resistance variation with Drain Current and Gate Voltage

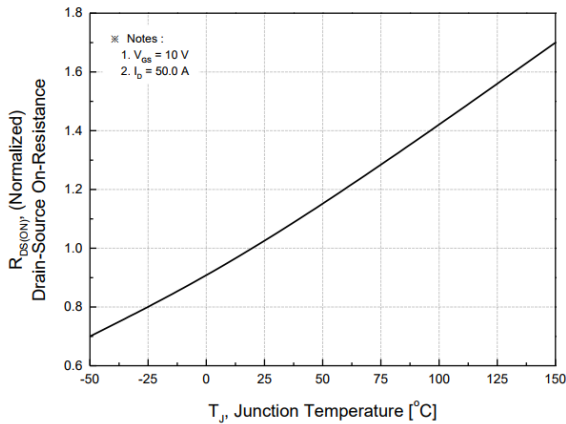


Figure 3. On Resistance vs. Junction Temperature

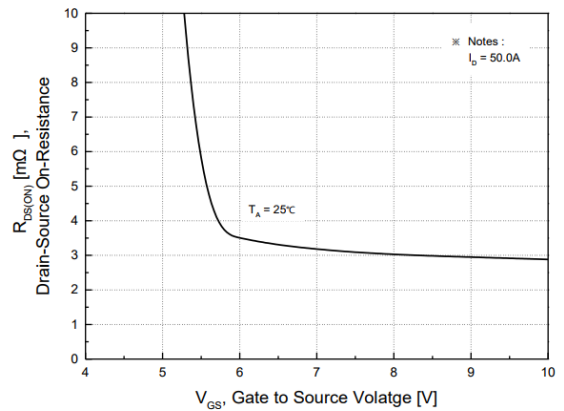


Figure 4. On-Resistance vs. Gate to Source Voltage

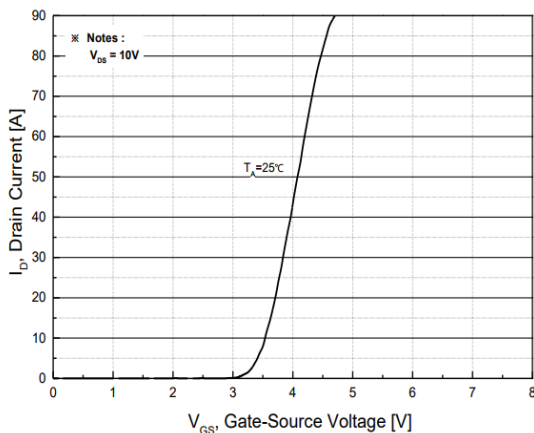


Figure 5. Transfer Characteristics

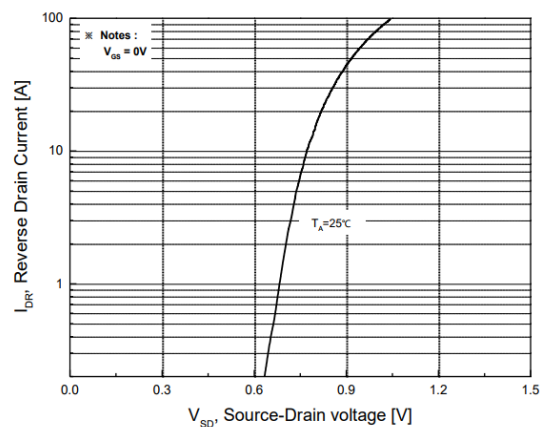


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Characteristics

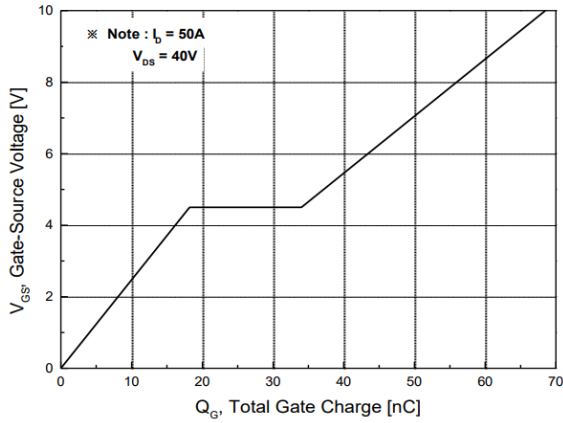


Figure 7. Gate Charge Characteristics

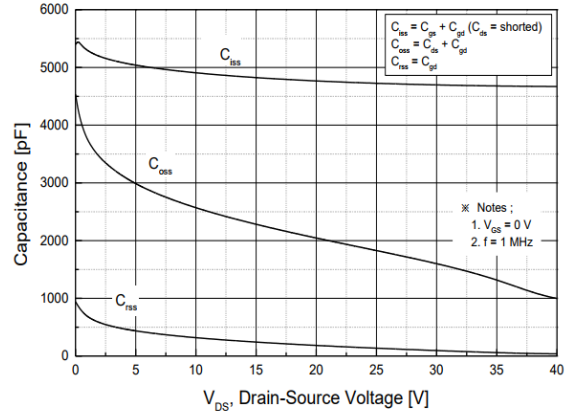


Figure 8. Capacitance Characteristics

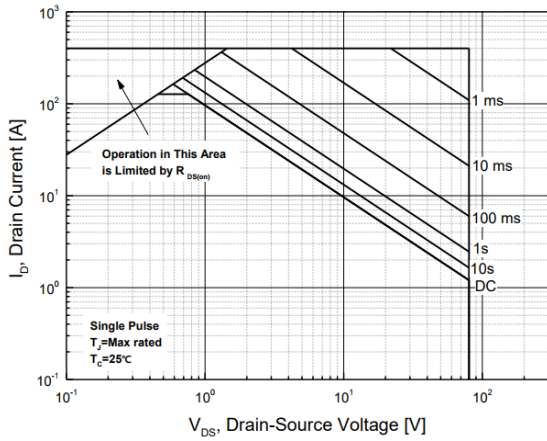


Figure 9. Maximum Safe Operating Area

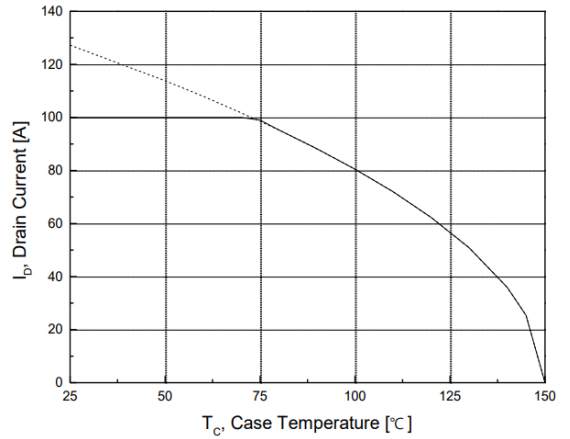


Figure 10. Maximum Drain Current vs. Case Temperature

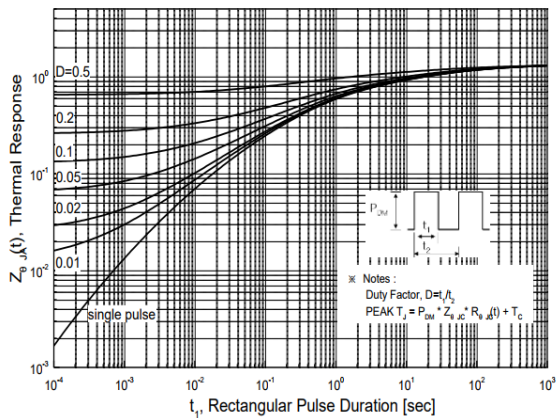
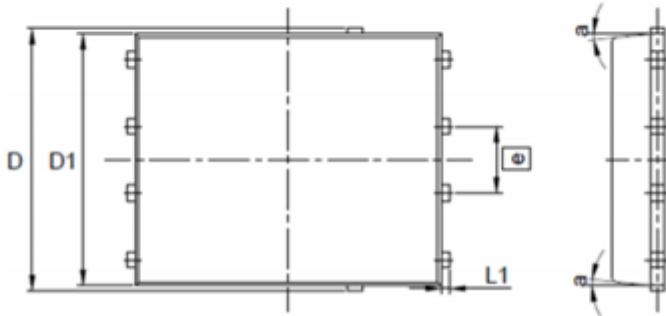
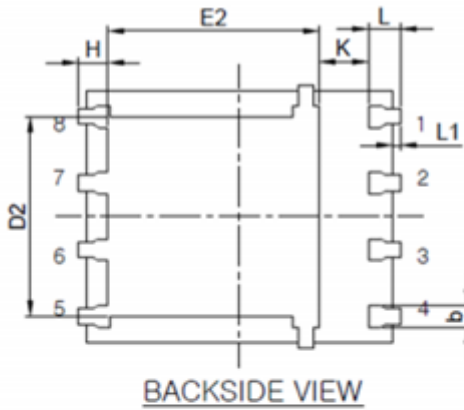


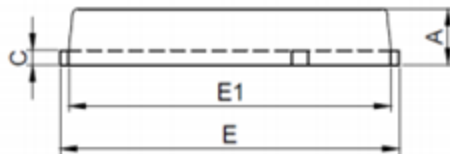
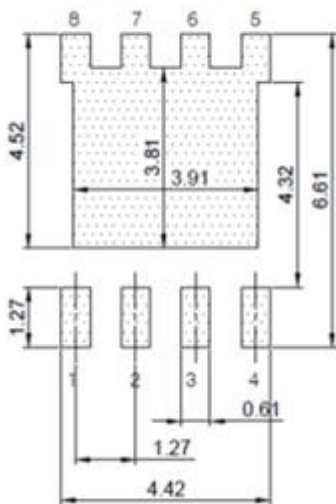
Figure 11. Transient Thermal Response Curve

Package Outline

Unit : mm



Land Pattern
(Only for Reference)



SYMBOL	DIMENSION		NOTES
	MIN	MAX	
A	0.90	1.10	
b	0.33	0.51	
C	0.20	0.34	
D	4.50	5.30	
D1	4.50	5.10	
D2	3.61	4.22	
E	5.90	6.30	
E1	5.50	6.10	
E2	3.38	4.30	
e	1.27 BSC		
H	0.41	0.71	
K	0.20	-	
L	0.51	0.71	
L1	0.06	0.20	
a	0°	12°	