

PM006N080CM

78V 70A 6.7mΩ Single N channel Trench MOSFET with Normal Diode

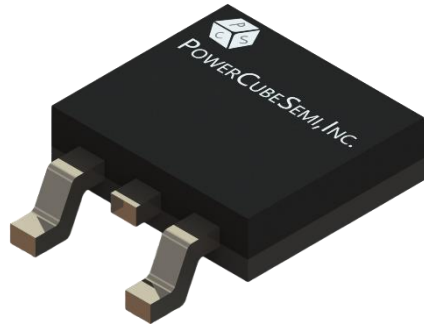
Features

Si Single N channel Trench MOSFET

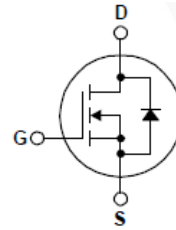
- Rated to 78V at 70Amps @ $T_j = 25^\circ\text{C}$
- Max $R_{DS(on)} = 6.7\text{ m}\Omega$
- Typ $R_{DS(on)} = 5.6\text{ m}\Omega$
- Gate Charge(Typ. $Q_g = 43.3\text{ nC}$)
- Improved dv/dt Capability
- 100% Avalanche Tested

Application

- Specifically for E-Bike Applications
- Switching Applications
- Drives



PKG type : TO-252



Description

PM006N080CM uses advanced PowerCubeSemi's middle voltage MOSFET technology, which provides high performance in on-state resistance, fast switching performance, and excellent quality. PM006N080CM is suitable device for Motor Drive applications and general purpose applications.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	78	V
I_D	Drain Current	$T_c=25^\circ\text{C}$	70	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	280	A
V_{GS}	Gate-Source Voltage		± 20	V
E_{AS}	Single Pulsed Avalanche Energy	$I_{AS}=16.5A, V_{GS}=10V$ $V_{DD}=50V, L=1.0mH$	128	mJ
P_d	Power Dissipation	$T_c=25^\circ\text{C}$	138	W
T_j	Operating Junction Temperature		175	$^\circ\text{C}$
T_{stg}	Storage Temperature		-55 to 175	$^\circ\text{C}$

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM006N080CM	PM006N080	TO-252	Tube & Reel	-	-

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	78	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 78V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.3	3.0	3.7	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	$V_{GS} = 10V, I_D = 35A$	-	5.6	6.7	m Ω
g_{FS}	Forward Transconductance	$V_{DS} = 10V, I_D = 35A$	-	60	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 39V, I_D = 35A, V_{GS} = 10V, R_G = 3\Omega$	-	17	-	ns
T_r	Turn-on Rise time		-	11	-	
$t_{d(off)}$	Turn-off Delay time		-	38	-	
T_f	Turn-off Fall time		-	14	-	

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.1	-	$^{\circ}\text{C}/\text{W}$
R_g	Gate Resistance	$V_{GS} = 0\text{V}, f = 1.0\text{MHz}$	2.5	-	Ω
C_{iss}	Input Capacitance	$V_{DS} = 39\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$	2911	-	pF
C_{oss}	Output Capacitance		630	-	
C_{rss}	Reverse Transfer Capacitance		37	-	
$Q_{g(\text{tot})}$	Total Gate Charge at 10V	$V_{DD} = 39\text{V}, I_D = 35\text{A}$ $V_{GS(\text{on})} = 10\text{V}$	43.3	-	nC
Q_{gs}	Gate to Source Gate Charge		11.3	-	
Q_{gd}	Gate to Drain "Miller" Charge		11.6	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	70	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	280	A
V_{SD}	Drain to Source Diode Forward Voltage	$I_F = 35\text{A}, V_{GS} = 0\text{V}$	0.9	1.2	V
T_{rr}	Reverse Recovery Time	$I_F = 35\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	80	-	ns
Q_{rr}	Reverse Recovery Charge		167	-	nC

Typical Characteristics

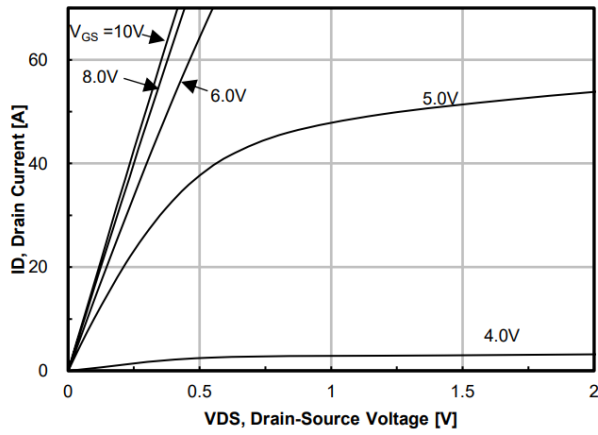


Figure 1. On-Region Characteristics

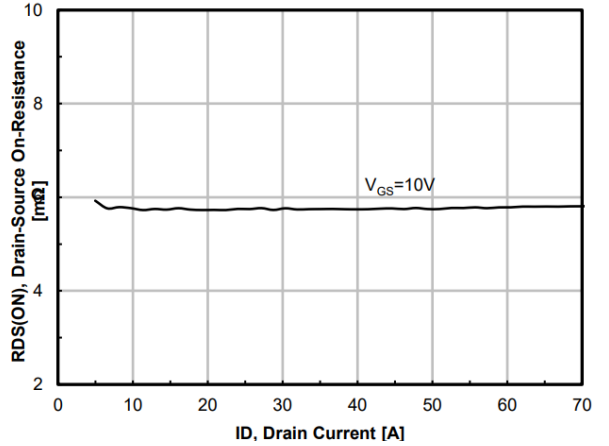


Figure 2. On-Resistance vs. Drain Current and Gate Voltage

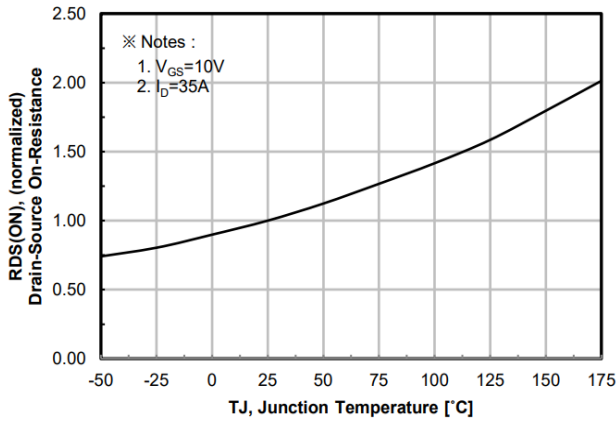


Figure 3. On Resistance vs. Junction Temperature

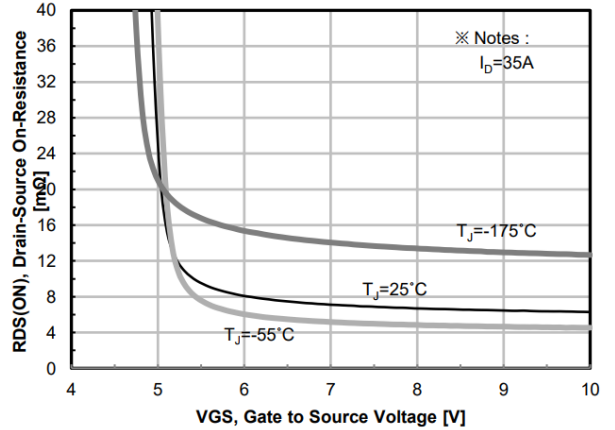


Figure 4. On-Resistance vs. Gate to Source Voltage

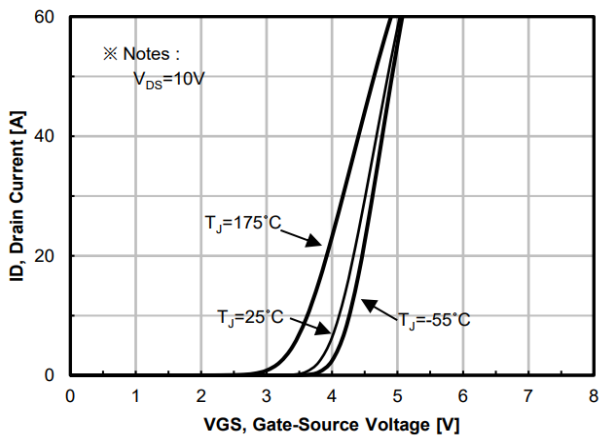


Figure 5. Transfer Characteristics

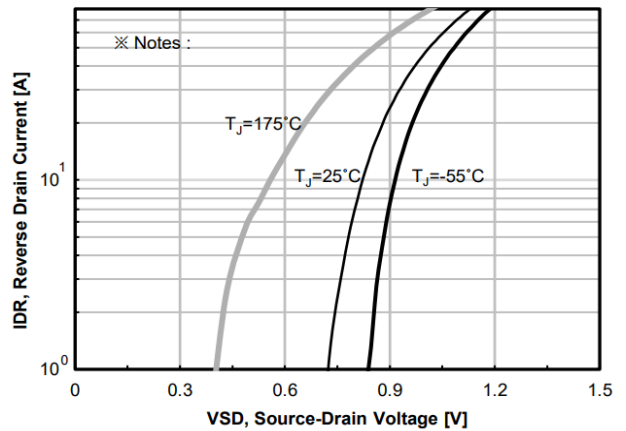


Figure 6. Source to Drain Diode Forward Voltage

Typical Characteristics

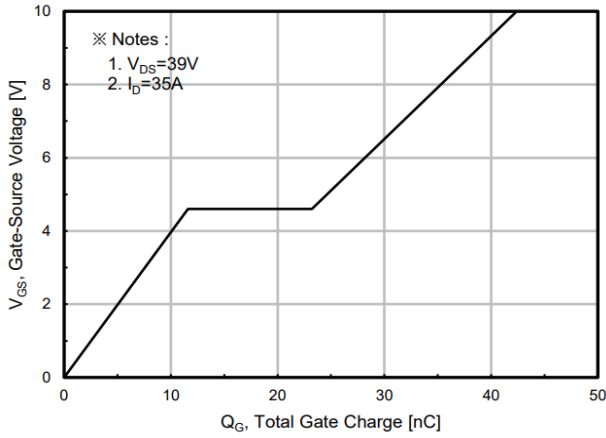


Figure 7. Gate Charge Characteristics

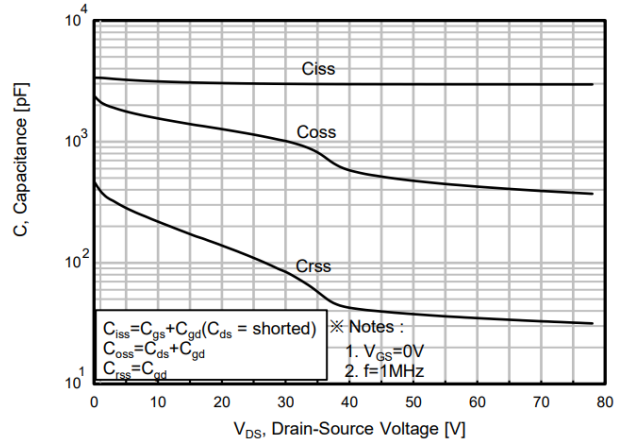


Figure 8. Capacitance Characteristics

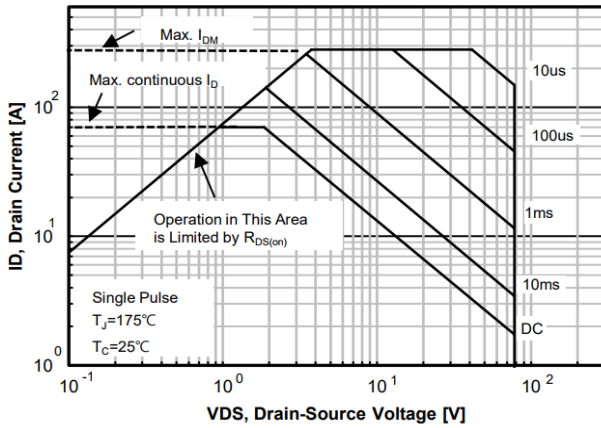


Figure 9. Maximum Safe Operating Area

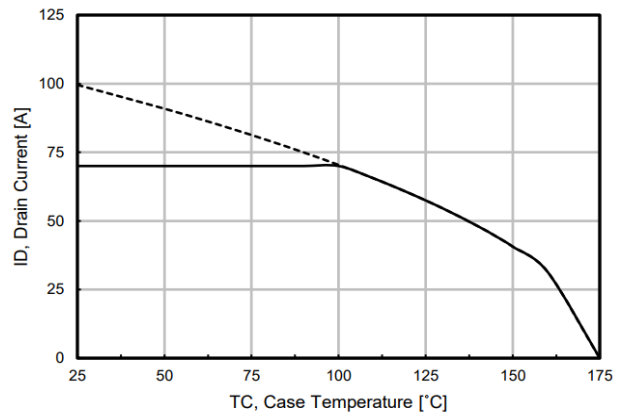


Figure 10. Maximum Drain Current vs. Case Temperature

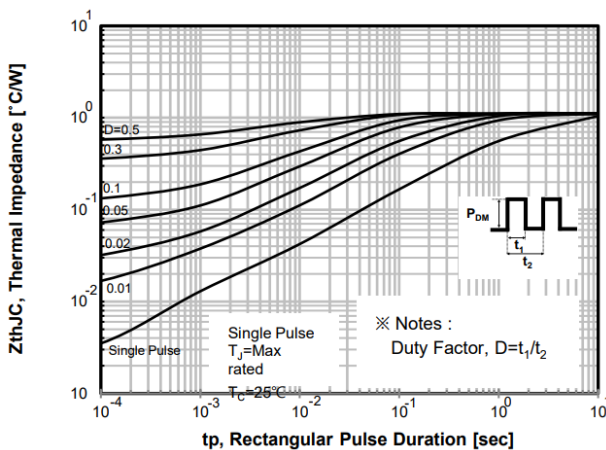
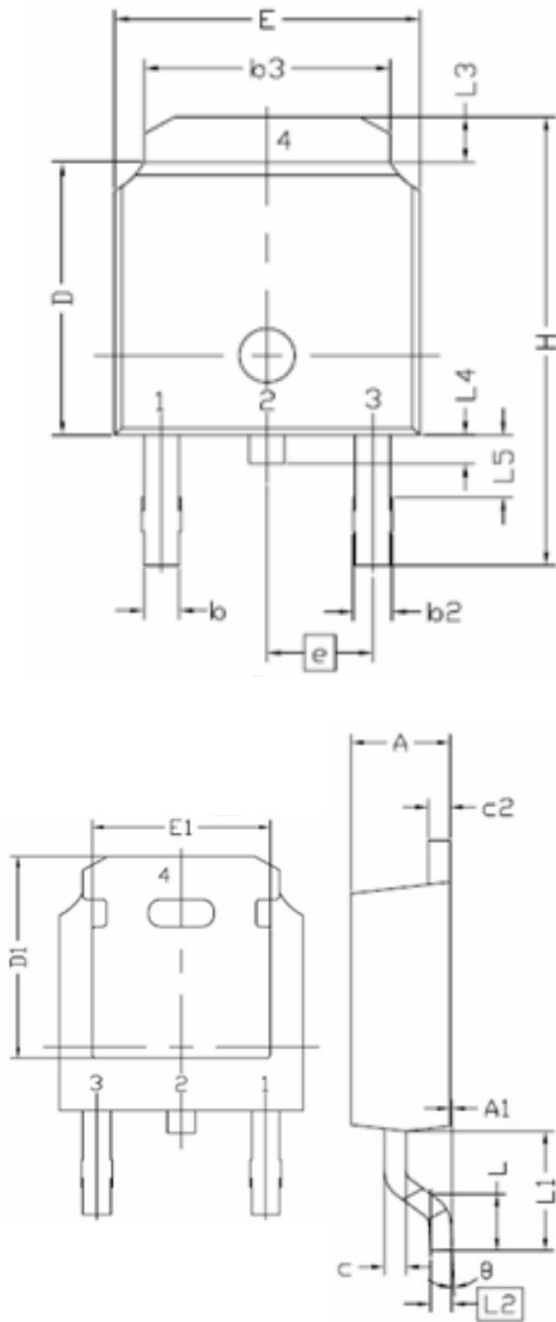


Figure 11. Transient Thermal Impedance, Junction to Ambient

Package Outline

Unit : mm



SYMBOL	DIMENSIONS			NOTES
	MIN	NOM	MAX	
E	6.34	6.54	6.74	
L	1.30	1.60	1.90	
L1	2.60	2.90	3.20	
L2	0.5 BSC			
L3	0.82	1.02	1.22	
L4	0.80	1.00	1.20	
L5	2.60	2.90	3.20	
D	5.80	6.10	6.40	
H	8.40	9.00	9.60	
b	1.42	1.52	1.62	
b2	2.35	2.55	2.75	
b3	5.20	5.30	5.40	
e	4.58 BSC			
A	2.08	2.28	2.48	
A1	0.00	0.15	-	
c	0.40	0.50	0.60	
c2	0.40	0.50	0.60	
D1	-	5.25	-	
E1	-	4.8	-	
θ	0.00°	10.00°		