PM008N100AM

100V 40A 8.7mΩ Single N channel Trench MOSFET with Normal Diode

POWERCUBESEMI, INC.
Potential · Convergence · Smart

Features

Si Single N channel Trench MOSFET

- Rated to 100V at 97Amps @T_J = 25℃

- Max $R_{DS(on)}$ = 8.4 mΩ

- Typ $R_{DS(on)}$ = 7.0 mΩ

- Gate Charge(Typ. Q_g=54.5 nC)

- 100% UIL Tested

- 100% Rg Tested

Application

- DC/DC Converter

- General purpose applications

PKG type : TO-220

Halogen-Free

RoHS

Description

PM008N100AM uses advanced PowerCubeSemi's MOSFET technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. PM008N100AM is suitable device for DC/DC Converter and general purpose applications.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	100	V
I_D	Drain Current	T_c=25℃	97	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	384	A
V_{GS}	Gate-Source Voltage		±20	V
E_{AS}	Single Pulsed Avalanche Energy	I_{AS}=19A, V_{GS}=10V, L=1.0mH	180	mJ
P_d	Power Dissipation	T_C=25℃	157	W
T_j	Operating Junction Temperature		150	℃
T_{stg}	Storage Temperature		-55 to 150	℃

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM008N100AM	PM008N100	TO-220	Tube	-	-

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V$, $I_D = 250\mu A$, $T_J = 25°C$	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 80V$, $V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = ±20V$, $V_{DS} = 0V$	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2.0	2.9	4.0	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	$V_{GS} = 10V$, $I_D = 50A$	-	7.0	8.4	$m\Omega$
g_{FS}	Forward Transconductance	$V_{DS} = 10V$, $I_D = 50A$	-	60	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DS} = 50\ V$, $I_D = 50A$, $V_{GS} = 10\ V$, $R_G = 3.0\Omega$	-	13.8	-	ns
T_r	Turn-on Rise time		-	13	-	
$t_{d(off)}$	Turn-off Delay time		-	39	-	
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		0.8	-	℃/W
R_g	Gate Resistance	V_{GS} = 0V, f = 1.0㎒	2.5	-	Ω
C_{iss}	Input Capacitance	V_{DS} = 40V, V_{GS} = 0V, f = 1.0㎒	3500	-	pF
C_{oss}	Output Capacitance		720	-	
C_{rss}	Reverse Transfer Capacitance		16	-	
$Q_{g(tot)}$	Total Gate Charge at 10V	V_{DS} = 50V, I_D = 50A $V_{GS(on)}$ = 10V	54.5	-	nC
Q_{gs}	Gate to Source Gate Charge		16.4	-	
Q_{gd}	Gate to Drain "Miller" Charge		10.3	-	

Electrical Characteristics of Si Diode

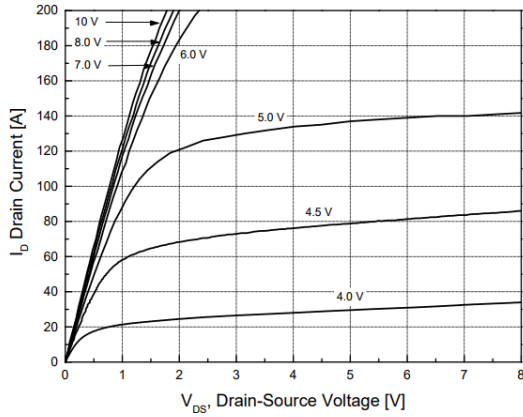| Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	97	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	384	A
V_{SD}	Drain to Source Diode Forward Voltage	I_{SD} = 50A, V_{GS} = 0V	0.9	1.2	V
T_{rr}	Reverse Recovery Time	I_{SD} = 50A, V_{GS} = 0V, dI_F/dt=150A/㎲	62	-	ns
Q_{rr}	Reverse Recovery Charge		197	-	nC

Typical Characteristics

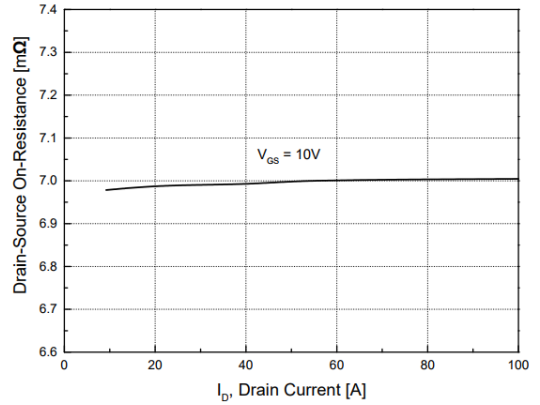Figure 1. On-Region Characteristics

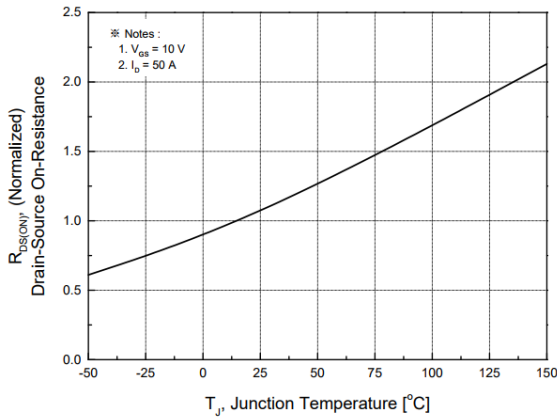Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

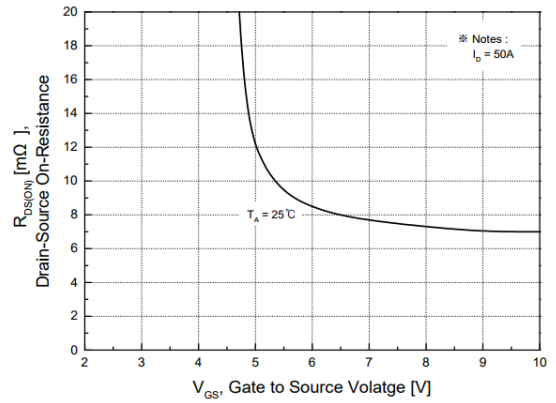Figure 3. On Resistance Variation with Temperature

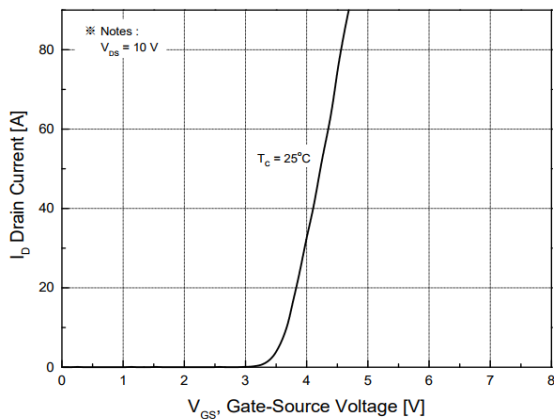Figure 4. On-Resistance Variation with Gate to Source Voltage
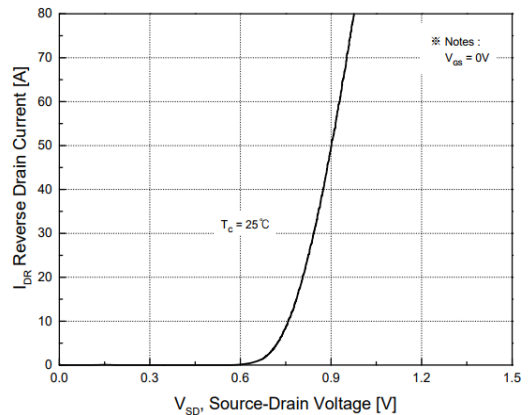

Figure 5. Transfer Characteristics

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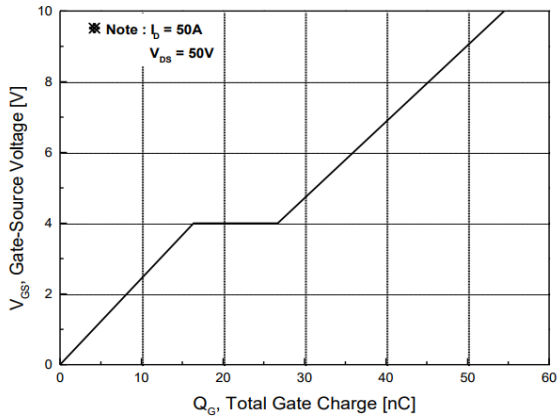
Typical Characteristics

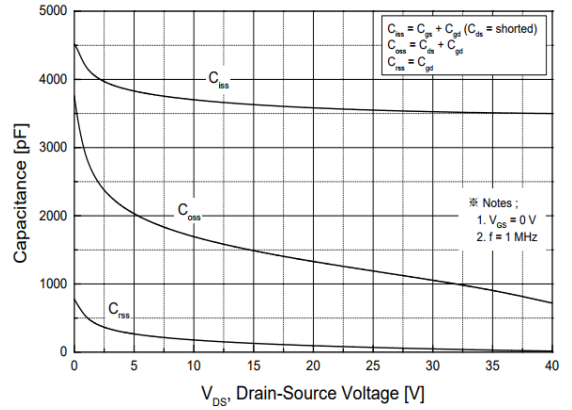**Figure 7. Gate Charge Characteristics**
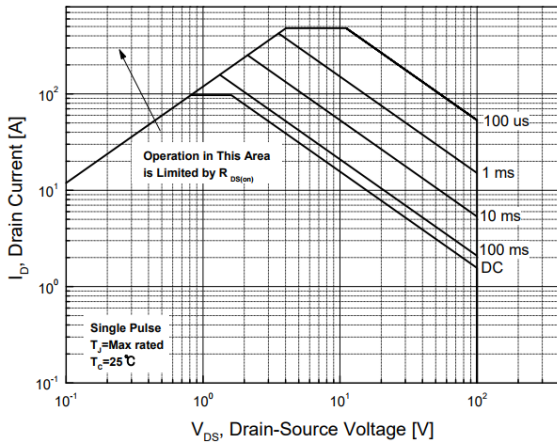

Figure 8. Capacitance Characteristics
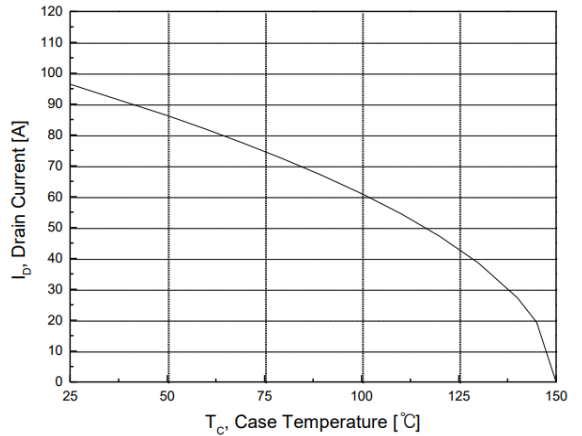

Figure 9. Maximum Safe Operating Area

Figure 10. Maximum Drain Current vs. Case Temperature

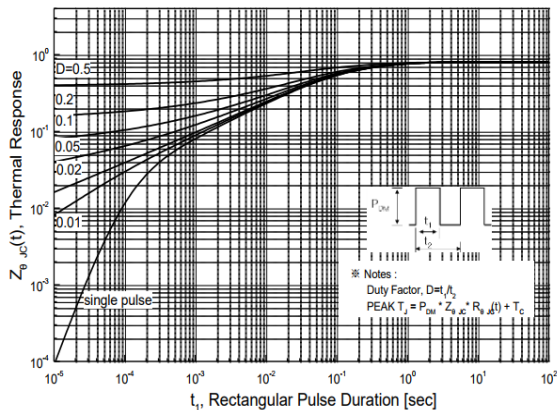**Figure 11. Transient Thermal Response Curve**

Package Outline

Unit : mm