PM080P150CG

POWERCUBESEMI, INC.
Potential · Convergence · Smart

-150V -50A 80mΩ Si Single P-ch Enhancement Mode MOSFET with Normal Diode

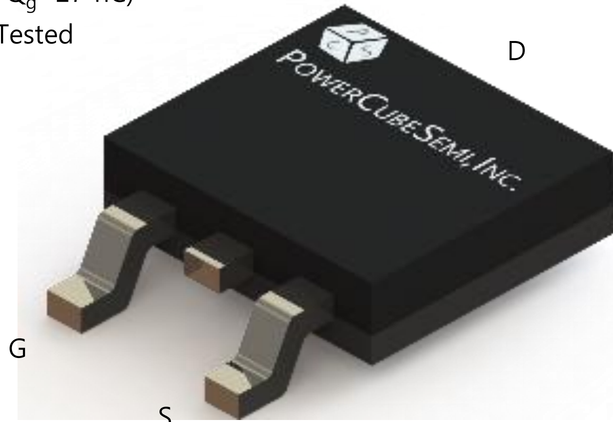
Features

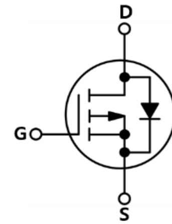
Si P-Ch Enhancement Mode Power MOSFET

- Rated to -150V at -50Amps @T_J = 25℃
- Max $R_{DS(on)}$ = 80 mΩ
- Typ $R_{DS(on)}$ = 65 mΩ
- Gate Charge(Typ. Q_g=27 nC)
- 100% Avalanche Tested

Application

- Power switch
- DC/DC converters





PKG type : TO-252 (DPAK)

Description

The PM080P150CG uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-source breakdown Voltage	V_{GS}=0V, I_D=-250μA	-150	V
I_D	Drain current	T_c=25℃	-50	A
I_{DM}	Drain current	Pulse width limited by junction temperature	-200	A
V_{GS}	Gate-source voltage		±20	V
E_{AS}	Single pulsed avalanche energy	V_{GS}=-10V, R_G=25Ω V_{DD}=-50V, L=0.5mH	132	mJ
P_d	Power dissipation	T_C=25℃	96	W
T_j	Operating junction		150	℃
T_{stg}	Storage temperature		-55 to 150	℃

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM080P150CG	PM080P150	TO-252	REEL	-	2500

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 = -250μA, T_J = 25°C	-150	-	-	V
I_{DSS}	Zero gate voltage drain current	V_{DS} = -150V, V_{GS} = 0V	-	-	-1	μA
I_{GSS}	Gate-source leakage current	V_{GS} = ±20V	-	-	±100	nA
$V_{GS(th)}$	Gate threshold voltage	V_{DS} =V_{GS}, I_D = -250μA	-1	-2.5	-4	V
$R_{DS(ON)}$	Static drain-source on state resistance	V_{GS} = -10V, I_D = -5A	-	65	80	mΩ
g_{FS}	Forward transconductance	V_{DS} = -5V, I_D = -5A	-	9	-	S
$t_{d(on)}$	Turn-on Delay time	V_{DD} = -75V, I_D = -5A, R_G = 3Ω	-	9	-	ns
t_r	Turn-on Rise time		-	10	-	
$t_{d(off)}$	Turn-off Delay time		-	29	-	
t_f	Turn-off Fall time		-	4	-	

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		1.3	-	℃/W
C_{iss}	Input capacitance	V_{DS} = -75V, V_{GS} = 0V, f = 1.0㎒	3918	-	pF
C_{oss}	Output capacitance		149	-	
C_{rss}	Reverse transfer capacitance		106	-	
$Q_{g(tot)}$	Total gate charge at 10V	V_{DD} = -75V, I_D = -5A V_{GS} = -4.5V	27	-	nC
Q_{gs}	Gate to source gate charge		7	-	
Q_{gd}	Gate to drain “Miller” charge		3	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current	T_c=25℃	-	-50	A
V_{SD}	Drain to source diode forward voltage	I_{SD} = -5A, V_{GS} = 0V	-	-1.2	V
T_{rr}	Reverse recovery time	I_F = -5A, V_{GS} = 0V, dI_F/dt=-500A/㎲	51	-	ns
Q_{rr}	Reverse recovery charge		434	-	nC

Typical Characteristics

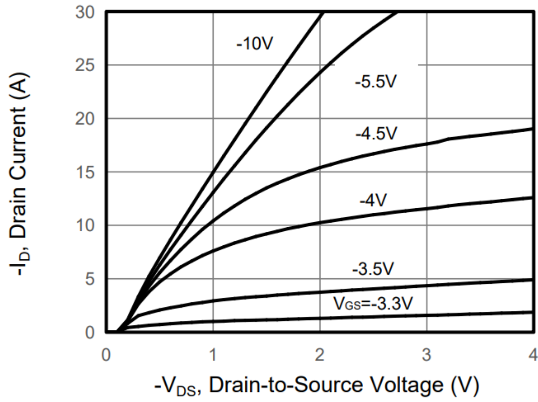


Figure 1. Output Characteristics

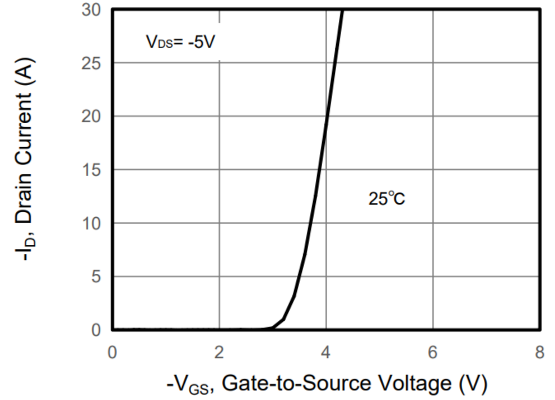


Figure 2. Transfer Characteristics

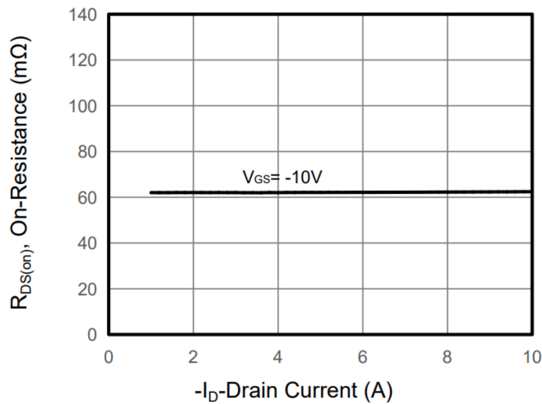


Figure 3. Drain Source On Resistance

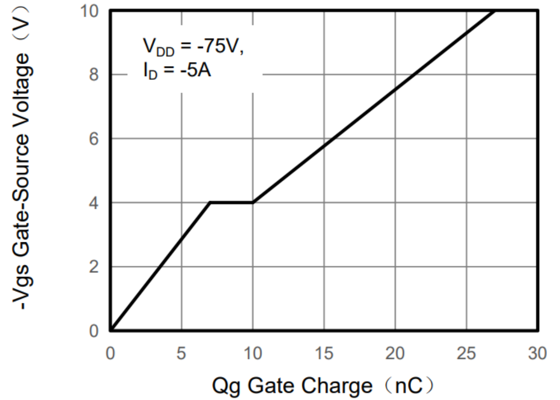


Figure 4. Gate Charge

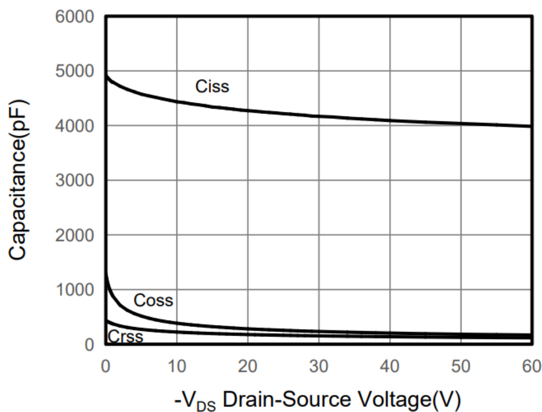


Figure 5. Capacitance

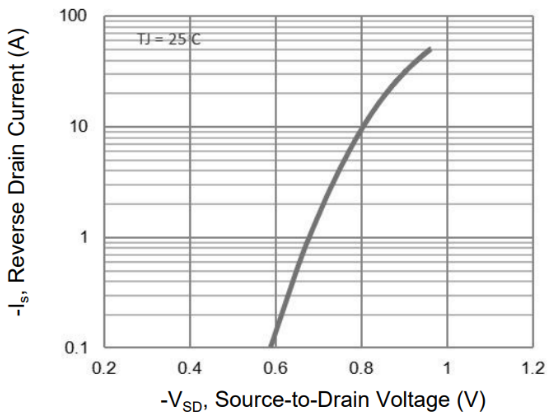


Figure 6. Source-Drain Diode Forward

Typical Characteristics

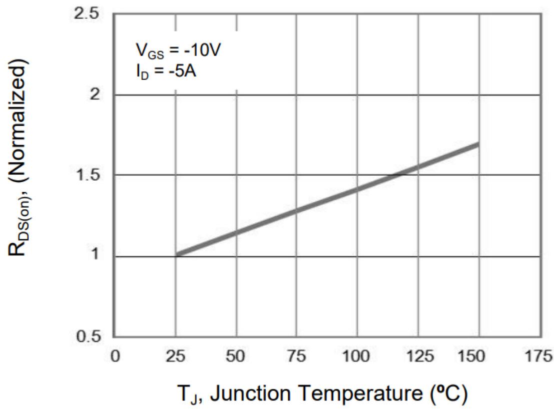


Figure 7. Drain-Source On-Resistance

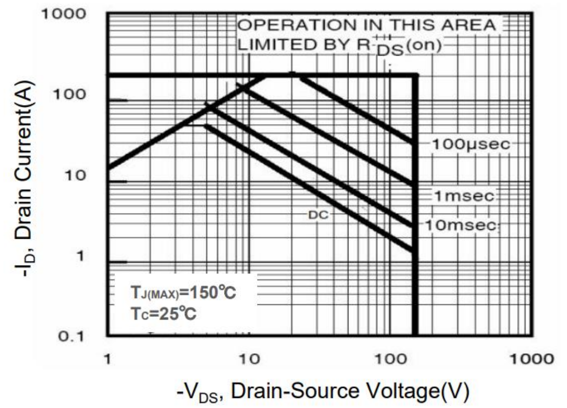


Figure 8. Safe Operation Area

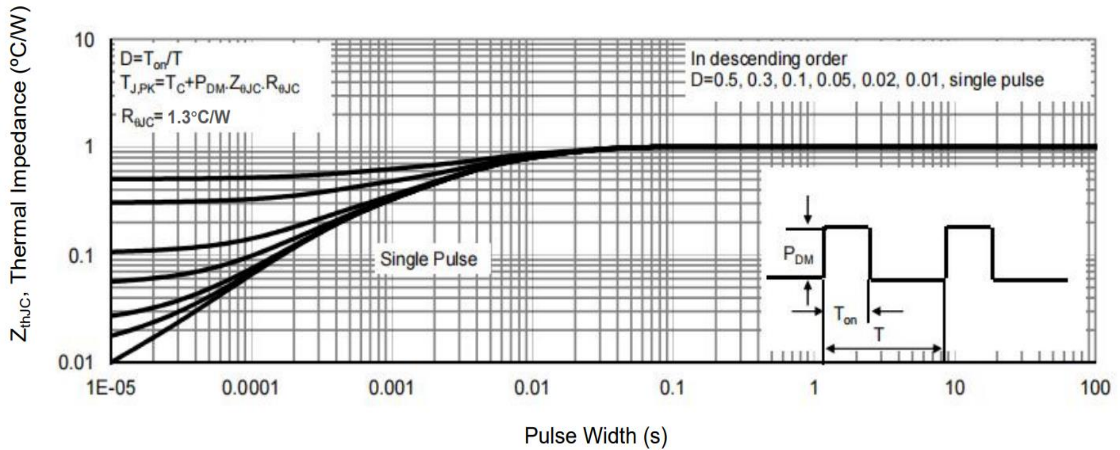
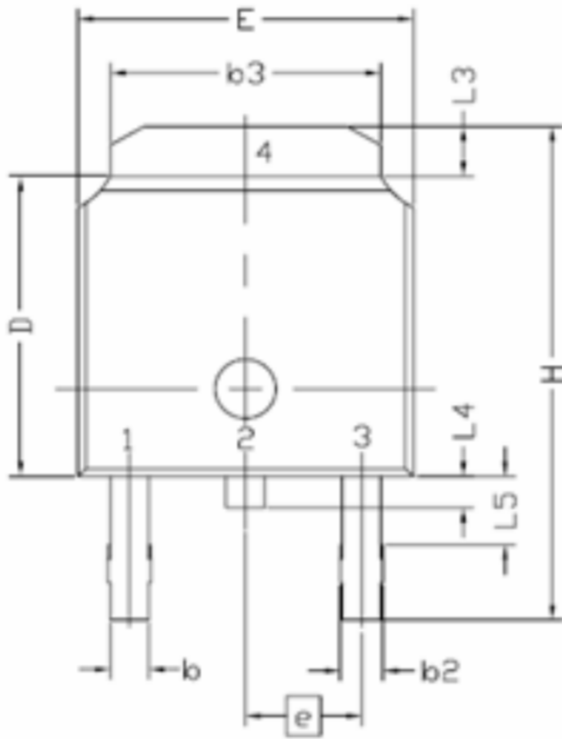
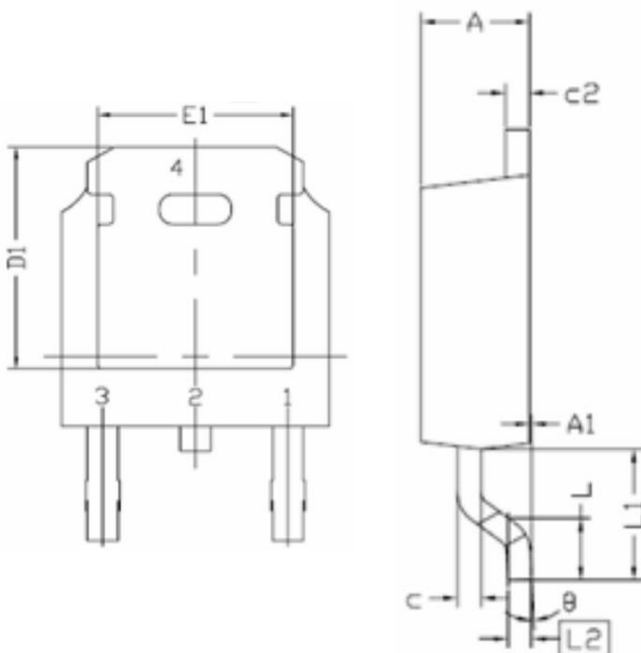


Figure 9. Normalized Maximum Transient Thermal Impedance

Package Outline





Unit : mm

SYMBOL	DIMENSIONS		
	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°	