PM005N150DM

150V 120A 5.4mΩ Single N channel Trench MOSFET with Normal Diode

POWERCUBESEMI, INC.
Potential · Convergence · Smart

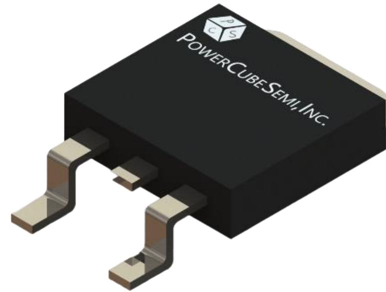
Features

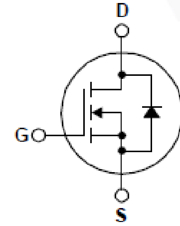
Si Single N channel Trench MOSFET

- Rated to 150V at 120Amps @T_J = 25℃
- Max $R_{DS(on)}$ = 5.40 mΩ
- Typ $R_{DS(on)}$ = 4.59 mΩ
- Gate Charge(Typ. Q_g=80 nC)
- Very low on-resistance $R_{DS(on)}$
- 100% Avalanche Tested
- 100% Rg Tested

Application

- Industrial Power Supply
- Load switch
- Drivers





PKG type : TO-263(D2PAK)

Description

PM005N150DM uses advanced PowerCubeSemi's middle voltage MOSFET technology, which provides high performance in on-state resistance, fast switching performance, and excellent quality. PM005N150DM 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=250μA	150	V
I_D	Drain Current	T_c=25℃	120	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	480	A
V_{GS}	Gate-Source Voltage		±20	V
E_{AS}	Single Pulsed Avalanche Energy	I_{AS}=30A, V_{GS}=10Ω V_{DD}=50V, L=1.0mH	450	mJ
P_d	Power Dissipation	T_C=25℃	375	W
T_j	Operating Junction Temperature		175	℃
T_{stg}	Storage Temperature		-55 to 175	℃

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM005N150DM	PM005N150	TO-263	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 = 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, V_{DS} = 0V	-	-	±100	nA
$V_{GS(th)}$	Gate threshold voltage	V_{DS} =V_{GS}, I_D = 250μA	3.1	3.6	4.1	V
$R_{DS(ON)}$	Static drain-source on state resistance	V_{GS} = 10V, I_D = 60A	-	4.59	5.4	mΩ
g_{FS}	Forward transconductance	V_{DS} =10V, I_D = 60A	-	TBD	-	S
$t_{d(on)}$	Turn-on Delay time	V_{DD} = 75 V, I_D = 60A, V_{GS} = 10 V, R_G = 3Ω	-	16	-	ns
T_r	Turn-on Rise time		-	21	-	
$t_{d(off)}$	Turn-off Delay time		-	39	-	
T_f	Turn-off Fall time		-	24	-	

Electrical Characteristics of Si MOSFET

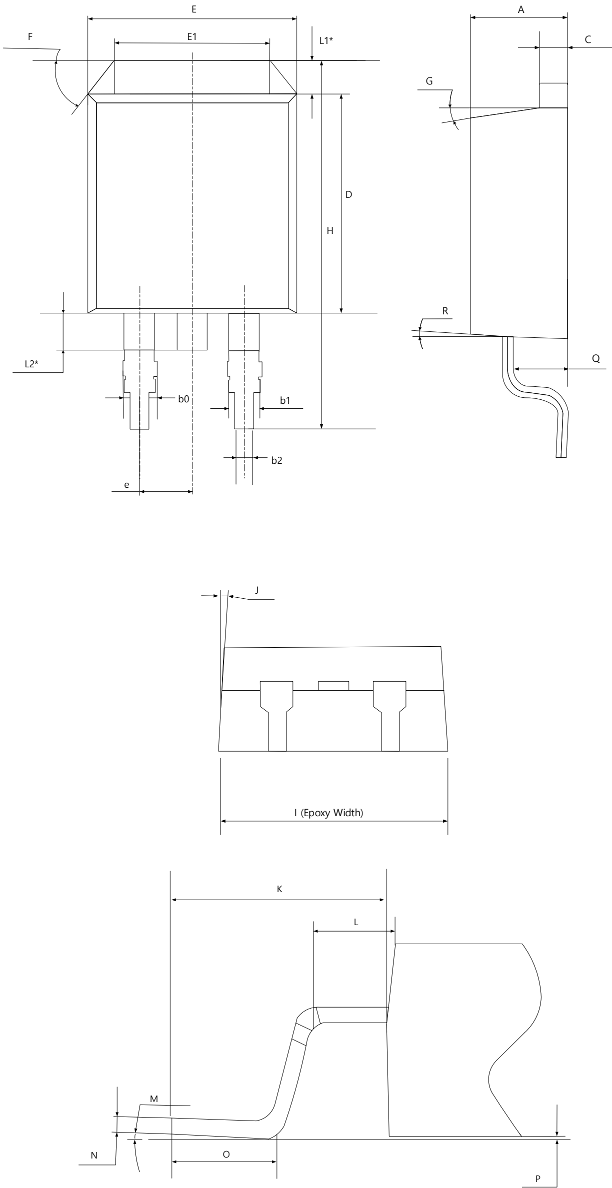
Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.4	-	℃/W
R_g	Gate Resistance	V_{GS} = 0V, f = 1.0㎒	2.3	-	Ω
C_{iss}	Input Capacitance	V_{DS} = 75V, V_{GS} = 0V, f = 1.0㎒	5917	-	pF
C_{oss}	Output Capacitance		706	-	
C_{rss}	Reverse Transfer Capacitance		4	-	
$Q_{g(tot)}$	Total Gate Charge at 10V	V_{DD} = 75V, I_D = 60A $V_{GS(on)}$ = 10V	80	-	nC
Q_{gs}	Gate to Source Gate Charge		29	-	
Q_{gd}	Gate to Drain “Miller” Charge		14	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	120	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	480	A
V_{SD}	Drain to Source Diode Forward Voltage	I_F = 60A, V_{GS} = 0V	0.9	1.2	V
T_{rr}	Reverse Recovery Time	I_F = 60A, V_{GS} = 0V, dI_F/dt=100A/㎲	TBD	-	ns
Q_{rr}	Reverse Recovery Charge		TBD	-	nC

Package Outline

Unit : mm



SYMBOL	DIMENSIONS			NOTES
	MIN	NOM	MAX	
A	4.40	4.60	4.80	
b0	1.17	1.37	1.57	
b1	1.17	1.27	1.37	
b2	0.70	0.80	0.90	
C	1.17	1.27	1.37	
D	8.50	8.70	8.90	
E	9.80	10.00	10.20	
E1	6.50	-	-	
e	2.44	2.54	2.64	
F	-	30º (Ref)	-	
G	-	7.0º	-	
H	15.00	15.30	15.60	
I	9.80	10.00	10.20	
J	-	3.0º	-	
K	5.00	5.30	5.60	
L	1.80	2.00	2.20	
L1	1.07	1.27	1.47	
L2	1.20	1.50	1.80	
M	0.0º	-	8.0º	
N	0.30	0.45	0.60	
O	2.34	2.54	2.74	
P	0	-	0.25	
Q	2.37	2.67	2.97	
R	-	7.0º	-	