

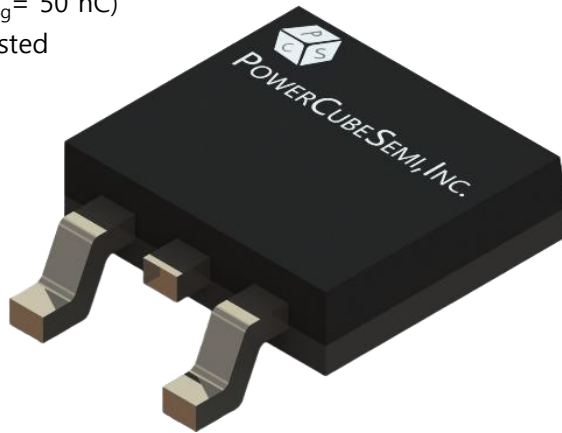
PM012N120CG

120V 65A 12mΩ Si Single N-ch Enhancement Mode Power MOSFET with Normal Diode

Features

Si Single N-ch Enhancement Mode Power MOSFET

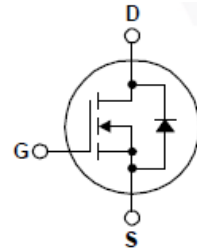
- Rated to 120V at 65Amps @ $T_j = 25^\circ\text{C}$
- Max $R_{DS(on)} = 12\text{ m}\Omega$
- Typ $R_{DS(on)} = 9.5\text{ m}\Omega$
- Gate Charge(Typ. $Q_g = 50\text{ nC}$)
- 100% Avalanche Tested



PKG type : TO-252 (DPAK)

Application

- Power Switch
- DC-DC Converters



Description

The PM012N120CG 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	$V_{GS}=0V, I_D=250\mu A$	120	V
I_D	Drain Current	$T_c=25^\circ\text{C}$	65	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	260	A
V_{GS}	Gate-Source Voltage		± 20	V
P_d	Power Dissipation	$T_c=25^\circ\text{C}$	75	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
PM012N120CG	PM012N120	TO-252	REEL	-	2500

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	120	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 120V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	3	3.5	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	$V_{GS} = 10V, I_D = 35A$	-	9.5	12	m Ω
g_{FS}	Forward Transconductance	$V_{DS} = 5V, I_D = 35A$	-	46	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 60V, I_D = 35A, V_{GS} = 10V, R_G = 1.6\Omega$	-	15	-	ns
T_r	Turn-on Rise time		-	10	-	
$t_{d(off)}$	Turn-off Delay time		-	34	-	
T_f	Turn-off Fall time		-	8	-	



Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.67	-	$^{\circ}\text{C}/\text{W}$
C_{iss}	Input Capacitance	$V_{DS} = 60\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	2911	-	pF
C_{oss}	Output Capacitance		329	-	
C_{rss}	Reverse Transfer Capacitance		11	-	
$Q_{g(tot)}$	Total Gate Charge at 10V	$V_{DD} = 60\text{V}, I_D = 35\text{A}$ $V_{GS(on)} = 10\text{V}$	50	-	nC
Q_{gs}	Gate to Source Gate Charge		17	-	
Q_{gd}	Gate to Drain "Miller" Charge		15	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	65	A
V_{SD}	Drain to Source Diode Forward Voltage	$I_{SD} = 35\text{A}, V_{GS} = 0\text{V}$	-	1.2	V
T_{rr}	Reverse Recovery Time	$I_F = 35\text{A}, di_F/dt = 100\text{A}/\mu\text{s}$	60	-	ns
Q_{rr}	Reverse Recovery Charge		106	-	nC

Typical Characteristics

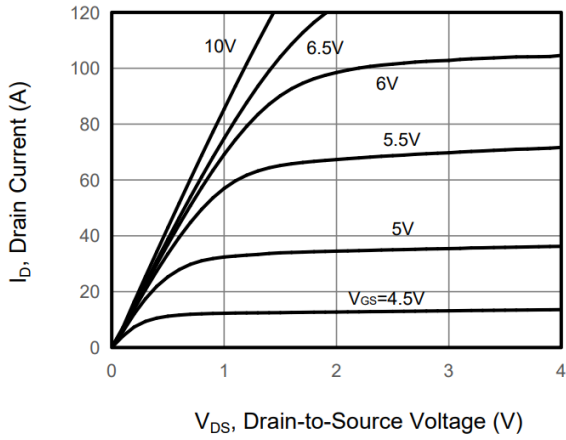


Figure 1. Output Characteristics

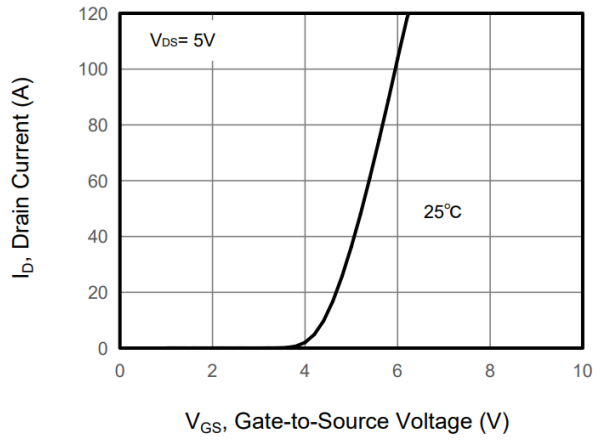


Figure 2. Transfer Characteristics

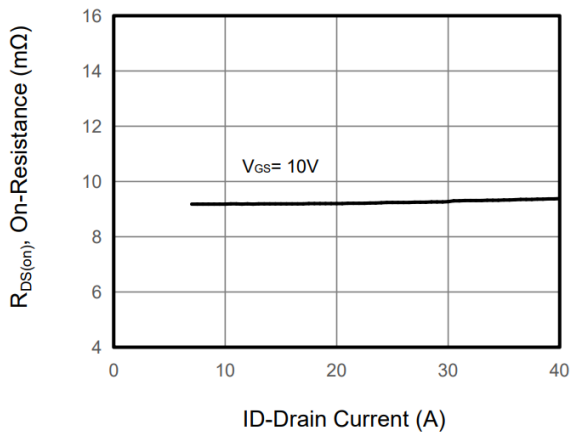


Figure 3. Drain to Source On-Resistance

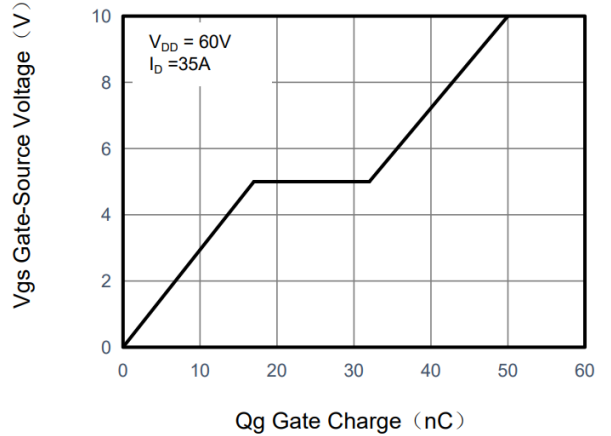


Figure 4. Gate Charge

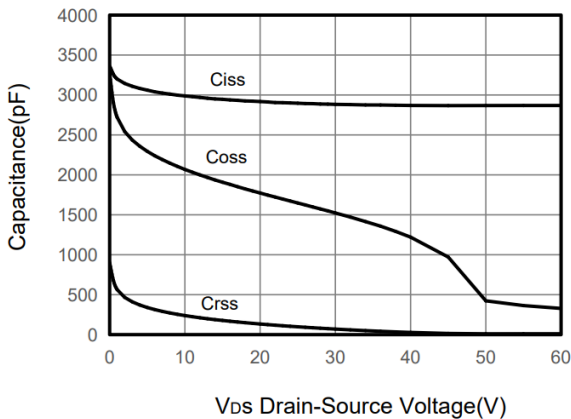


Figure 5. Capacitance Characteristics

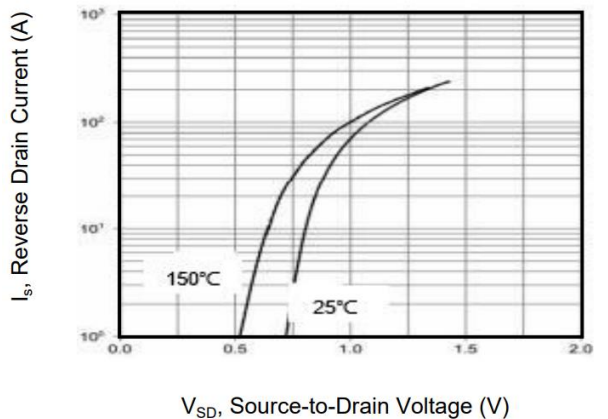


Figure 6. Source to Drain Diode Forward

Typical Characteristics

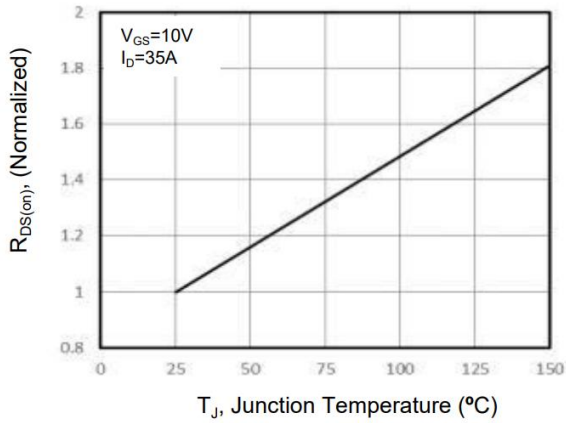


Figure 7. Drain to Source On-Resistance

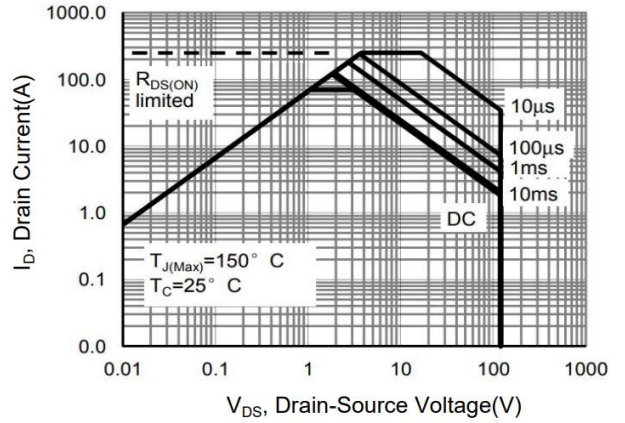


Figure 8. Safer Operation Area

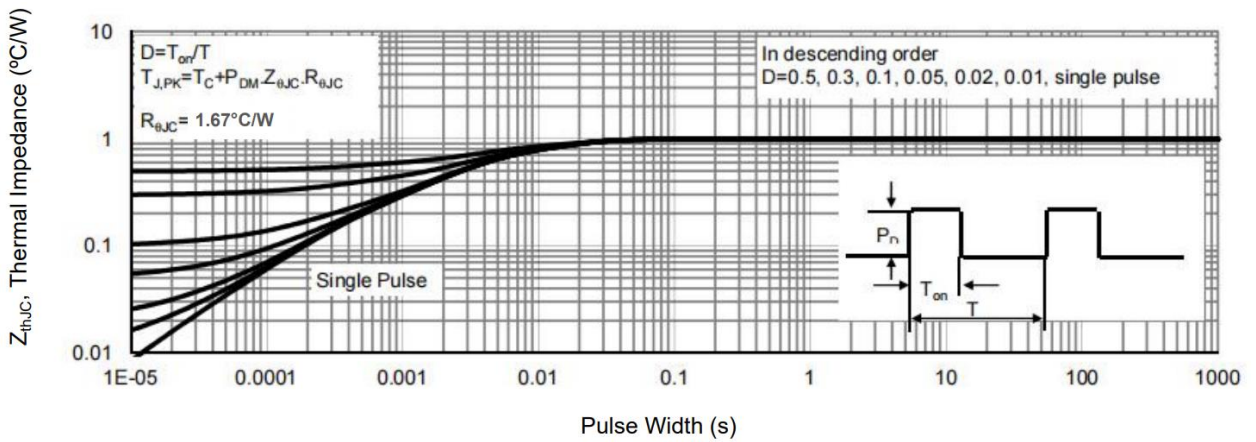
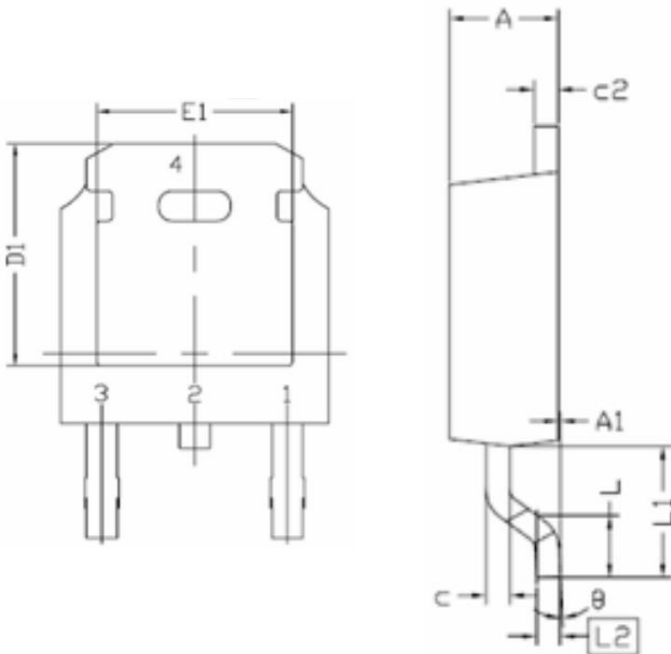
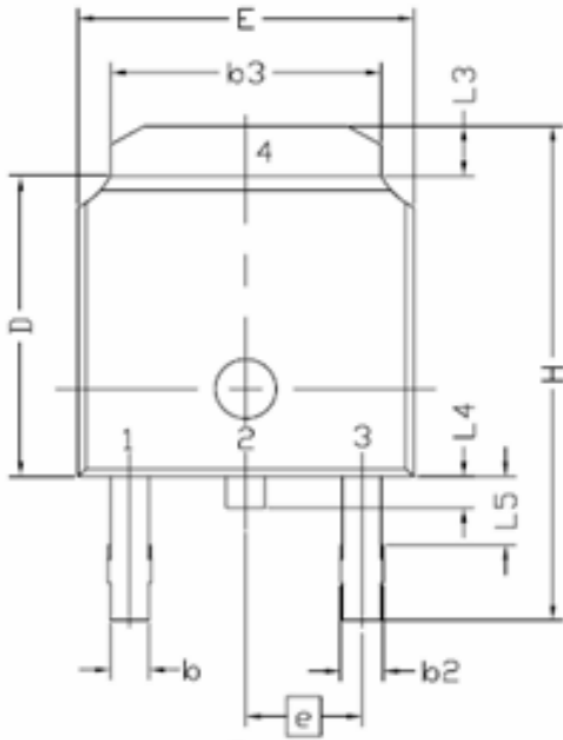


Figure 9. Normalized Maximum Transient Thermal Impedance

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°	