PSP006N050HR

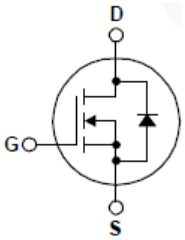
500V 6A 1.2Ω Si Single N-channel Planar MOSFET

PowerCubeSemi, Inc.
Potential · Convergence · Smart

Features

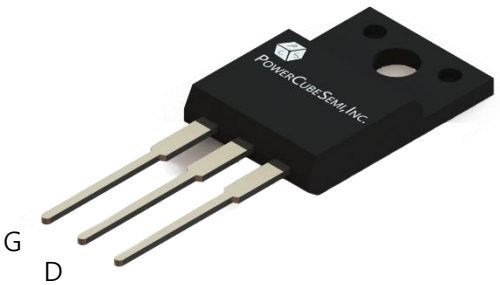
Si Single N-channel Planar MOSFET

- Rated to 500V at 6Amps @T_J = 25℃
- Max $R_{DS(on)}$ = 1.4 Ω
- Typ $R_{DS(on)}$ = 1.2 Ω
- Low Gate Charge(Typ. Q_g=13.5 nC)
- Low Reverse transfer capacitance
- 100% Single pulse avalanche energy Test
- Power switch circuit of adaptor and charger



Halogen-Free

RoHS



PKG type : TO-220F

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	500	V
I_D	Drain Current	T_c=25℃	6	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	24	A
V_{GS}	Gate-Source Voltage		±30	V
E_{AS}	Single Pulsed Avalanche Energy		250	mJ
P_d	Power Dissipation	T_C=25℃	75	W
T_j	Operating Junction Temperature		-55 to 150	℃
T_{stg}	Storage Temperature		-55 to 150	℃

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PSP006N050HR	PSP006N050	TO-220F	Tube	-	50 Unit

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	500	-	-	V
$BV_{DSS}/\Delta T_J$	Drain-source breakdown voltage	I_D = 250μA, Referenced to T_J = 25°C	-	0.67	-	V/°C
I_{DSS}	Zero gate voltage drain current	V_{DS} = 650V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate-source leakage current	V_{GS} = ±30V, V_{DS} = 0V	-	-	±10	μA
$V_{GS(th)}$	Gate threshold voltage	V_{DS} = V_{GS}, I_D = 250μA	2	-	4	V
$R_{DS(ON)}$	Static drain-source on state resistance	V_{GS} = 10V, I_D = 3A	-	1.2	1.4	Ω
g_{FS}	Forward Transconductance	V_{DS} = 10V, I_D = 3A	-	4	-	S
$t_{d(on)}$	Turn-on Delay time	V_{DS} = 250V, I_D = 6A, R_G = 9.1Ω	-	11	-	ns
T_r	Turn-on Rise time		-	15	-	
$t_{d(off)}$	Turn-off Delay time		-	31	-	
T_f	Turn-off Fall time		-	15	-	

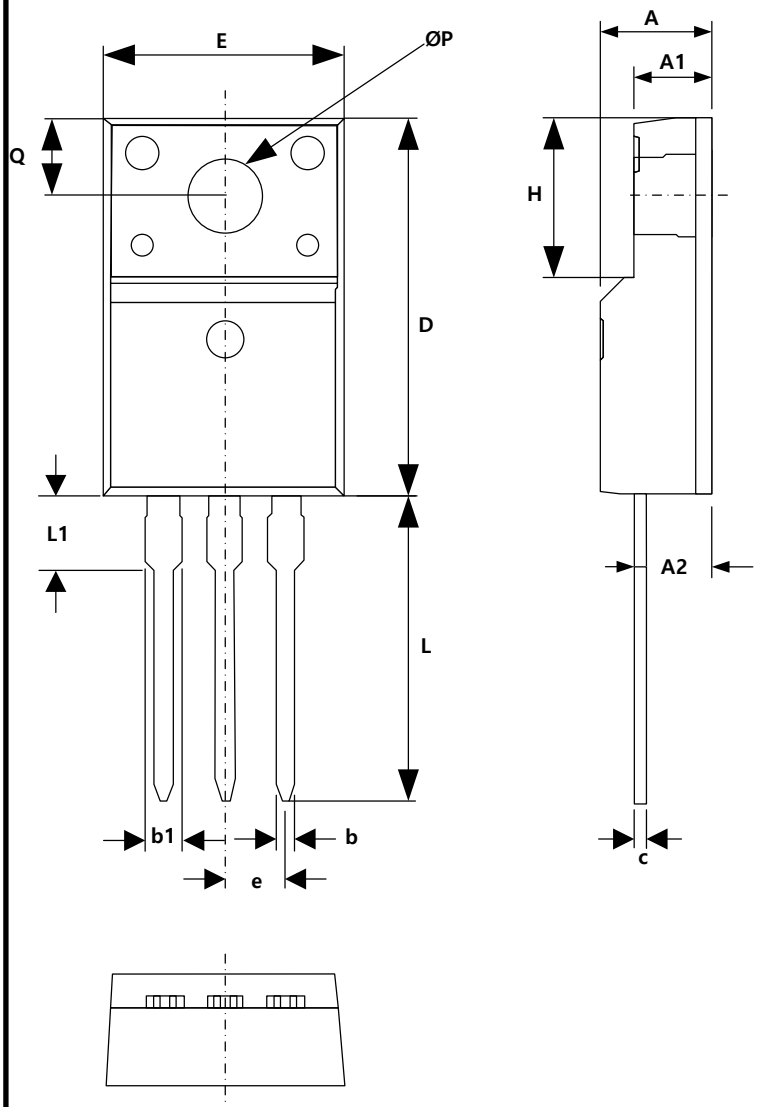
Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		1.67	-	℃/W
C_{iss}	Input capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	580	-	pF
C_{oss}	Output capacitance		65	-	
C_{rss}	Reverse transfer capacitance		6.3	-	
$Q_{g(tot)}$	Total gate charge	V_{DS} = 250, I_D = 6A $V_{GS(on)}$ = 10V	13.5	-	nC
Q_{gs}	Gate to source gate charge		3	-	
Q_{gd}	Gate to drain "Miller" charge		6.2	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current		-	5	A
I_{SM}	Maximum pulsed drain to source diode forward current		-	20	A
V_{SD}	Drain to source diode forward voltage	I_S = 6A, V_{GS} = 0V	-	1.5	V
T_{rr}	Reverse recovery time	V_{GS} = 0V, I_S = 6A, dI_F/dt=100A/㎲	388	-	ns
Q_{rr}	Reverse recovery charge		1.72	-	μC

Package Outline



[Unit : mm]

SYMBOL	DIMENSIONS		NOTES
	MIN	MAX	
A	4.50	4.90	
A1	2.34	2.74	
A2	2.56	2.96	
b	0.70	0.90	
b1	1.27	1.47	
c	0.45	0.60	
D	15.67	16.07	
E	9.96	10.36	
e	2.54 BSC		
H	6.48	6.88	
L	12.68	13.28	
L1	3.03	3.43	
ϕP	3.08	3.28	
Q	3.20	3.40	