

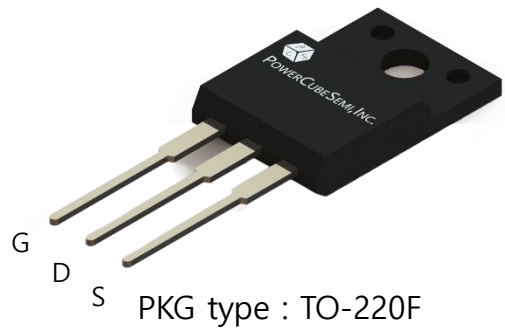
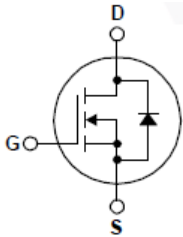
PSP009N065HR

650V 9A 0.745Ω Si Single N-channel Planar MOSFET

Features

Si Single N-channel Planar MOSFET

- Rated to 650V at 9Amps @ $T_j = 25^{\circ}\text{C}$
- Max $R_{DS(on)} = 0.9 \Omega$
- Typ $R_{DS(on)} = 0.745 \Omega$
- Low Gate Charge(Typ. $Q_g=19 \text{ nC}$)
- Low Crss(Typ. $Crss=5.3 \text{ pF}$)
- Fast Switching
- 100% Avalanche Tested
- Improved dv/dt capability



Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	650	V
I_D	Drain Current	$T_c=25^{\circ}\text{C}$	9	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	36	A
V_{GS}	Gate-Source Voltage		± 30	V
E_{AS}	Single Pulsed Avalanche Energy		426	mJ
P_d	Power Dissipation	$T_c=25^{\circ}\text{C}$	32.1	W
T_j	Operating Junction Temperature		-55 to 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
PSP009N065HR	PSP009N065	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	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	650	-	-	V
$BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature Coefficient	$I_D = 250\mu A, \text{Referenced to } T_J = 25^\circ C$	-	0.6	-	V/°C
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 650V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-source leakage current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
$R_{DS(ON)}$	Static drain-source on state resistance	$V_{GS} = 10V, I_D = 4.5A$	-	0.745	0.9	Ω
g_{FS}	Forward Transconductance	$V_{DS} = 40V, I_D = 4.5A$	-	6	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DS} = 325V, I_D = 9A, R_G = 25\Omega$	-	18	-	ns
T_r	Turn-on Rise time		-	30	-	
$t_{d(off)}$	Turn-off Delay time		-	61	-	
T_f	Turn-off Fall time		-	36	-	



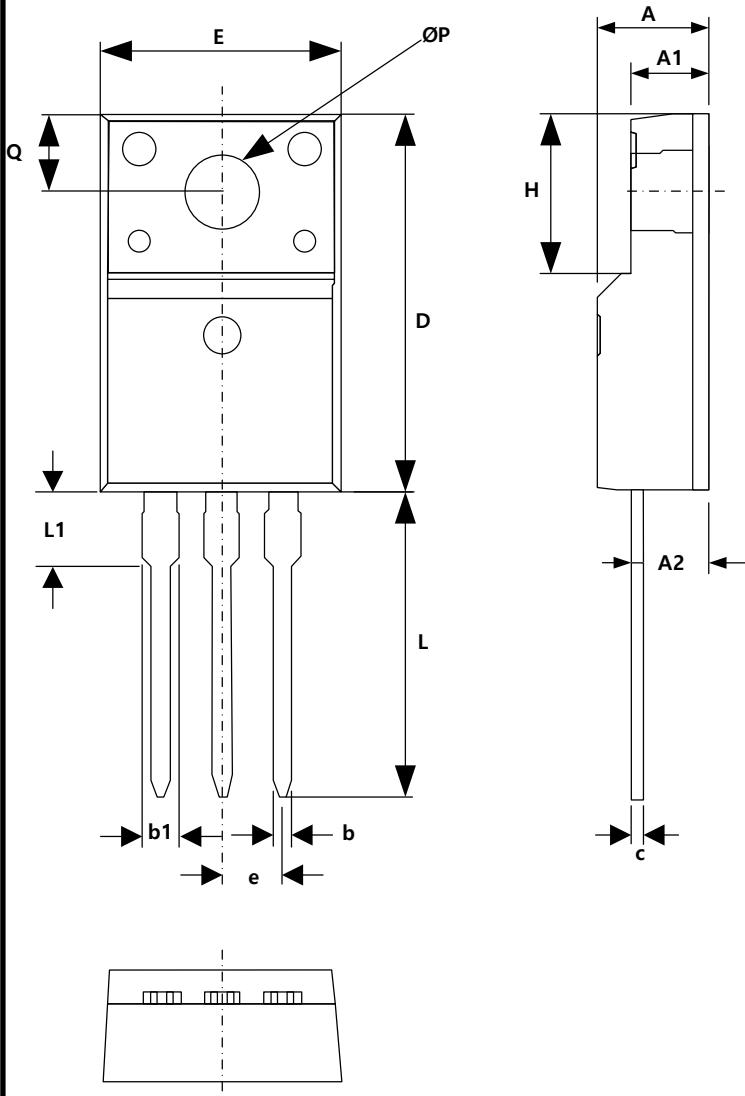
Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		4.46	-	$^{\circ}\text{C}/\text{W}$
C_{iss}	Input capacitance	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	1037	-	pF
C_{oss}	Output capacitance		138	-	
C_{rss}	Reverse transfer capacitance		5.3	-	
$Q_{g(\text{tot})}$	Total gate charge	$V_{DS} = 520, I_D = 9\text{A}$ $V_{GS(\text{on})} = 10\text{V}$	19	-	nC
Q_{gs}	Gate to source gate charge		7.3	-	
Q_{gd}	Gate to drain "Miller" charge		8.5	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current		-	9	A
I_{SM}	Maximum pulsed drain to source diode forward current		-	36	A
V_{SD}	Drain to source diode forward voltage	$I_{SD} = 9\text{A}, V_{GS} = 0\text{V}$	-	1.2	V
T_{rr}	Reverse recovery time	$V_{GS} = 0\text{V}, I_S = 9\text{A},$ $di_f/dt = 100\text{A}/\mu\text{s}$	431	-	ns
Q_{rr}	Reverse recovery charge		2.6	-	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	