

PSZ10080H

800V 11A 450mΩ Si Super junction MOSFET with Zener Diode

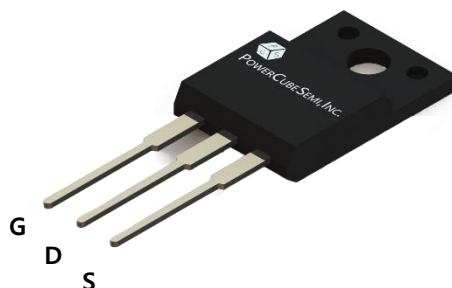
Features

Si Super junction MOSFET

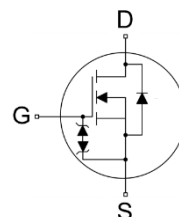
- Rated to 800V at 11Amps @ $T_J = 25^{\circ}\text{C}$
- Max $R_{DS(on)} = 450\text{ m}\Omega$
- Typ $R_{DS(on)} = 390\text{ m}\Omega$
- Gate Charge(Typ. $Q_g = 25\text{ nC}$)
- Low Power loss by High-Speed Switching and Low on-resistance
- 100% Avalanche Tested
- Excellent ESD robustness

Application

- PFC Power Supply Stages
- Switching Applications
- Adapter



PKG type : TO-220F



Description

PSZ10080H is Power MOSFET that can realize very low on-resistance and gate charge. It will provide much high efficiency by using optimized charge coupling technology. These user-friendly devices give an advantage of low EMI to designers as well as low switching loss.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	800	V
I_D	Continuous Drain Current	$T_c=25^{\circ}\text{C}$	11	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	33	A
V_{GS}	Gate-Source Voltage		± 30	V
E_{AS}	Single Pulsed Avalanche Energy		470	mJ
P_d	Power Dissipation	$T_c=25^{\circ}\text{C}$	31	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
PSZ10080H	PSZ10080	TO-220F	TUBE	-	50

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-source breakdown voltage	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	800	-	-	V
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 800V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-source leakage current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	10	μA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	3.5	4.5	V
$R_{DS(ON)}$	Static drain-source on state resistance	$V_{GS} = 10V, I_D = 7.1A$	-	390	450	m Ω
$t_{d(on)}$	Turn-on Delay time	$V_{DS} = 400V, I_D = 11A, V_{GS} = 10V, R_G = 25\Omega$	-	24	-	ns
T_r	Turn-on Rise time		-	42	-	
$t_{d(off)}$	Turn-off Delay time		-	137	-	
T_f	Turn-off Fall time		-	22	-	



Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		4	-	$^{\circ}\text{C}/\text{W}$
R_g	Gate resistance	$V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$	23	-	Ω
C_{iss}	Input capacitance	$V_{DS} = 100\text{V}$, $V_{GS} = 0\text{V}$, $f = 400\text{kHz}$	847	-	pF
C_{oss}	Output capacitance		40	-	
C_{rss}	Reverse transfer capacitance		1.5	-	
$Q_{g(\text{tot})}$	Total gate charge at 10V	$V_{DS} = 640\text{V}$, $I_D = 11\text{A}$ $V_{GS(\text{on})} = 10\text{V}$	25	-	nC
Q_{gs}	Gate to source gate charge		6.9	-	
Q_{gd}	Gate to drain "Miller" charge		9.3	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current		-	11	A
I_{SM}	Maximum pulsed drain to source diode forward current		-	33	A
V_{SD}	Drain to source diode forward voltage	$I_{SD} = 11\text{A}$, $V_{GS} = 0\text{V}$	-	1.4	V
T_{rr}	Reverse recovery time	$I_{SD} = 11\text{A}$, $V_{DD} = 100\text{V}$, $dI_F/dt = 100\text{A}/\mu\text{s}$	441	-	ns
Q_{rr}	Reverse recovery charge		5.4	-	μC
I_{rrm}	Reverse recovery current		25	-	A

Typical Characteristics

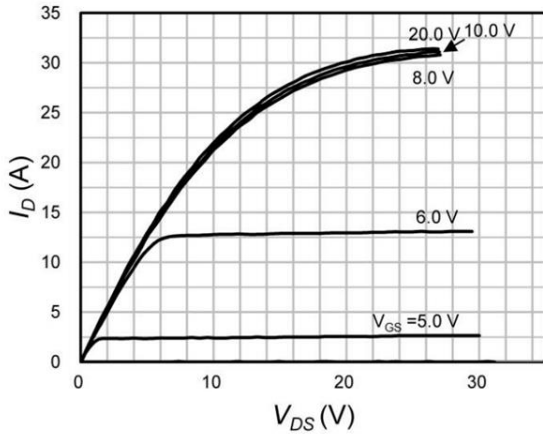


Figure 1. On-region Characteristics

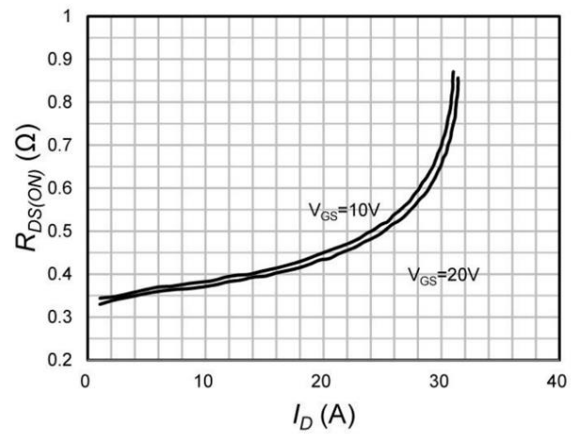


Figure 2. Drain-Source On-State Resistance vs. Drain Current

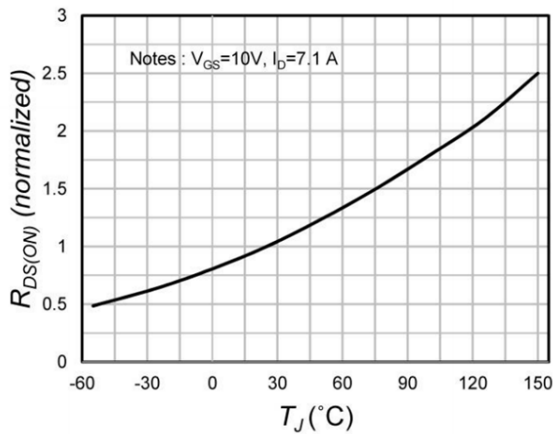


Figure 3. Drain-Source On-State Resistance (Normalized)

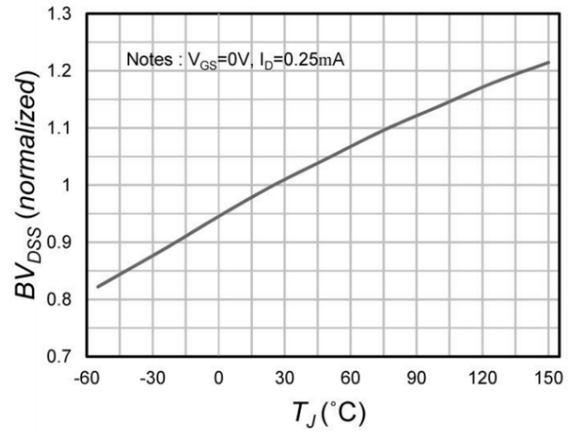


Figure 4. Drain-Source Breakdown Voltage (Normalized)

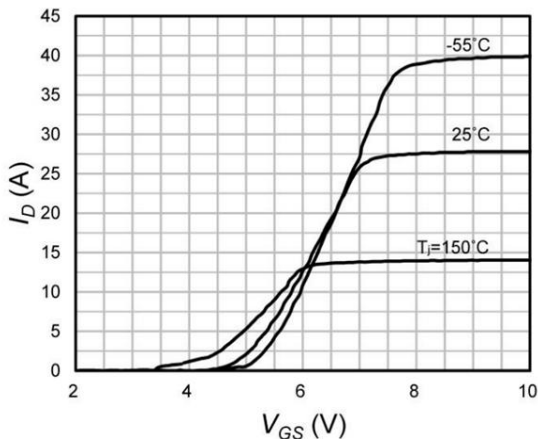


Figure 5. Transfer Characteristics

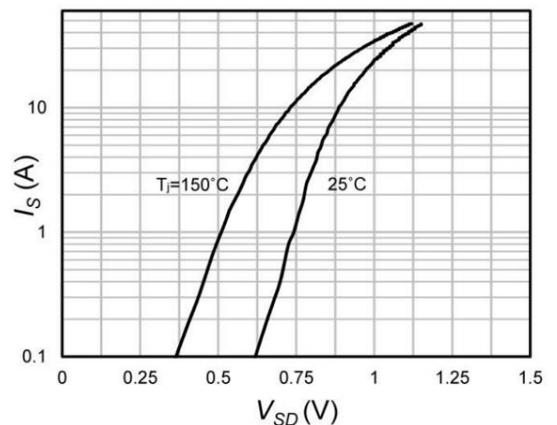


Figure 6. Forward Characteristics Of Reverse Diode

Typical Characteristics

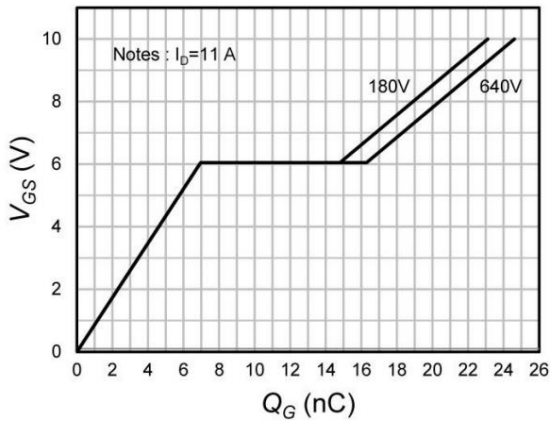


Figure 7. Gate Charge

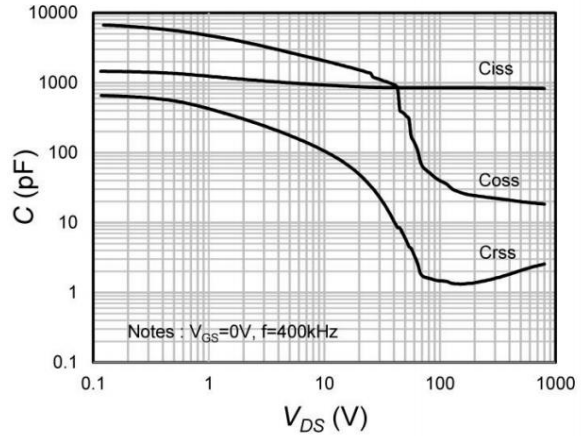


Figure 8. Capacitance Characteristics

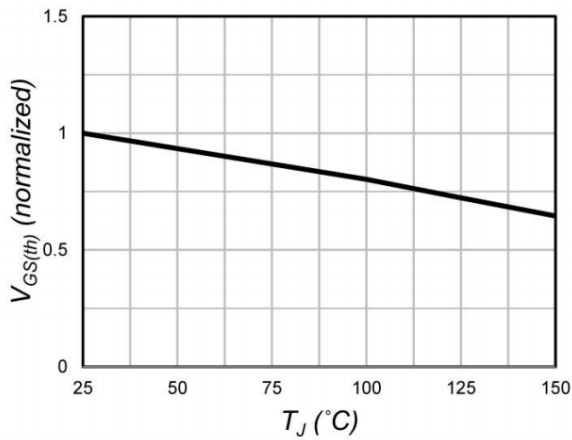


Figure 9. $V_{GS(TH)}$ variation vs. Temperature (Normalized)

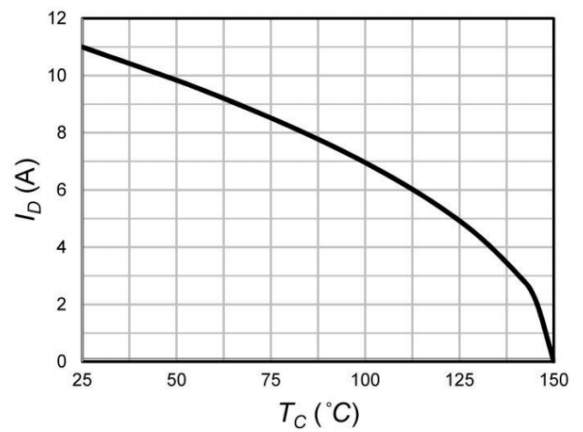


Figure 10. Maximum Drain Current vs. Case Temperature

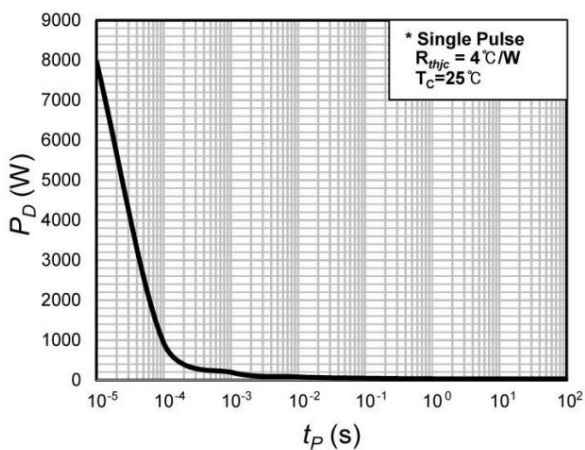


Figure 11. Power Dissipation

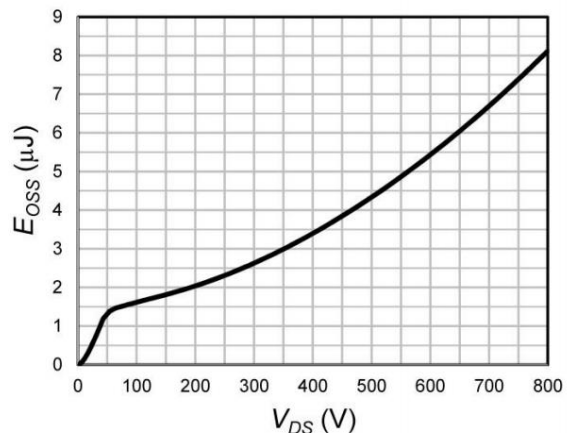


Figure 12. Output Capacitance stored energy

Typical Characteristics

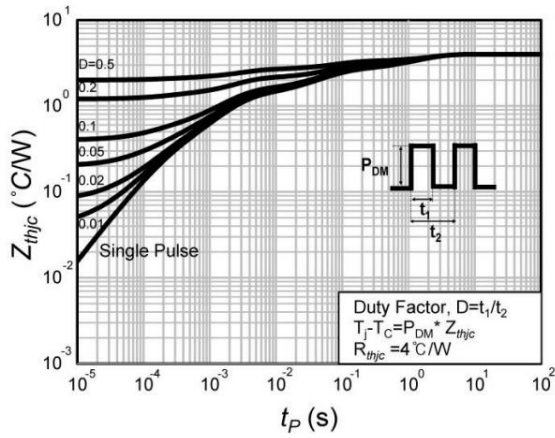


Figure 13. Transient thermal impedance

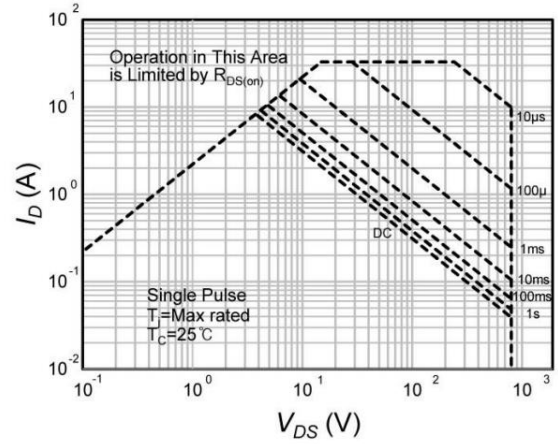
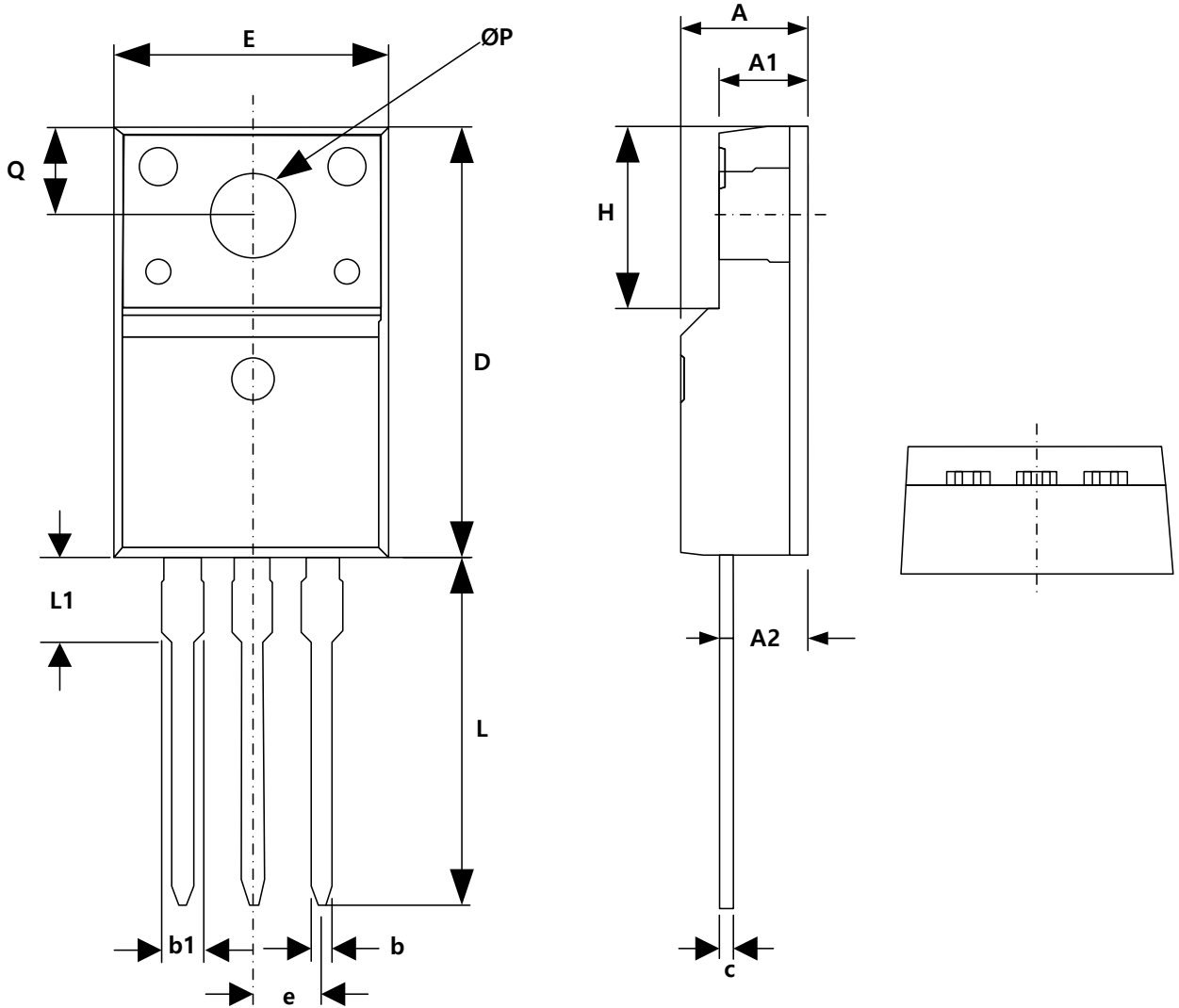


Figure 14. Safe operating area



Package Outline



SYMB	DIMENSIONS [mm]	
	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

SYMB	DIMENSIONS [mm]	
	MIN	MAX
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