PSZ17080D

PowerCubeSemi, Inc.
Potential · Convergence · Smart

800V 17A 210mΩ Si Super junction MOSFET with Zener Diode

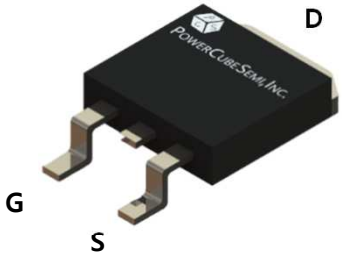
Features

Si Super junction MOSFET

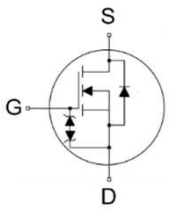
- Rated to 800V at 17Amps @T_C=25℃
- Max $R_{DS(on)}$ = 210 mΩ
- Improved dv/dt Capability
- 100% Avalanche Tested

Application

- PV Inverters
- LED Lighting



PKG type : D2PAK (TO-263)



Halogen-Free

RoHS

Description

PSZ17080D is PowerCubeSemi's second generation of high voltage Super Junction MOSFET that is utilizing charge balance technology for outstanding low on-resistance and lower gate charge performance. This advanced technology is tailored to minimize conduction loss, provide superior switching performance, and withstand extreme dv/dt rate and higher avalanche energy. Consequently, the combination of Super Junction MOSFET is suitable for PV inverters and LED Lighting.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=1mA	800	V
I_D	Drain Current	T_c=25℃	17	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	51	A
V_{GS}	Gate-Source Voltage		±30	V
E_{AS}	Single Pulsed Avalanche Energy		95.4	mJ
P_d	Power Dissipation	T_C=25℃	416	W
T_J	Operating Junction Temperature		150	℃
T_{stg}	Storage Temperature		-55 to 150	℃

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Quantity
PSZ17080D	PSZ17080	TO-263	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 = 1㎃, T_J = 25°C	800	-	-	V
I_{DSS}	Zero gate voltage drain current	V_{DS} = 800V, V_{GS} = 0V	-	-	1	㎂
I_{GSS}	Gate-source leakage current	V_{GS} = ±30V, V_{DS} = 0V	-	-	±10	㎂
$V_{GS(th)}$	Gate threshold voltage	V_{DS} =V_{GS}, I_D = 1㎃	2.4	-	3.6	V
$R_{DS(ON)}$	Static drain-source on state resistance	V_{GS} = 10V, I_D = 8.5A	-	185	210	mΩ
$t_{d(on)}$	Turn-on Delay time	V_{DS} = 400 V, I_D = 8.5A, V_{GS} = 10 V, R_G = 4.7Ω	-	119.6	-	ns
T_r	Turn-on Rise time		-	84.2	-	
$t_{d(off)}$	Turn-off Delay time		-	162.7	-	
T_f	Turn-off Fall time		-	52.8	-	

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		0.3	-	K/W
R_g	Gate resistance	V_{GS} = 0V, f = 1.0㎒	4	-	Ω
C_{iss}	Input capacitance	V_{DS} = 380V, V_{GS} = 0V, f = 400㎑	2200	-	pF
C_{oss}	Output capacitance		48	-	
C_{rss}	Reverse transfer capacitance		3	-	
$Q_{g(tot)}$	Total gate charge at 10V	V_{DS} = 380V, I_D = 11A V_{GS} = 10V	50	-	nC
Q_{gs}	Gate to source gate charge		8	-	
Q_{gd}	Gate to drain "Miller" charge		4	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Continuous Diode forward current		-	17	A
V_{SD}	Drain to source diode forward voltage	I_{SD} = 8.5A, V_{GS} = 0V	-	1.08	V
T_{rr}	Reverse recovery time	I_{SD} = 8.5A, V_{DD} = 100V, dI_F/dt=100A/㎲	221	-	ns
Q_{rr}	Reverse recovery charge		3.8	-	μC
I_{rrm}	Reverse recovery current		35	-	A

Typical Characteristics

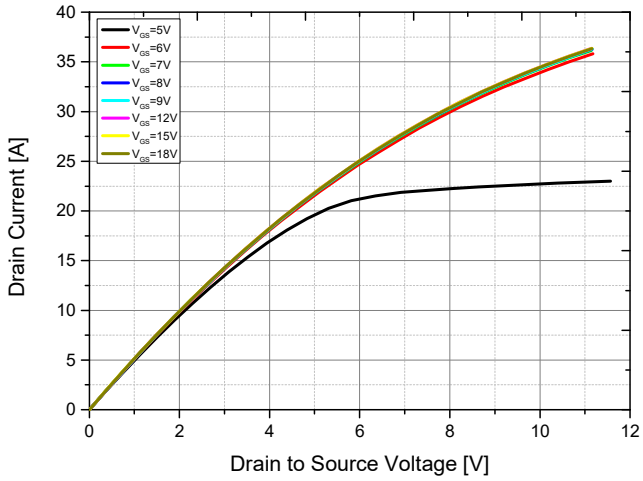


Figure 1. On-state characteristics

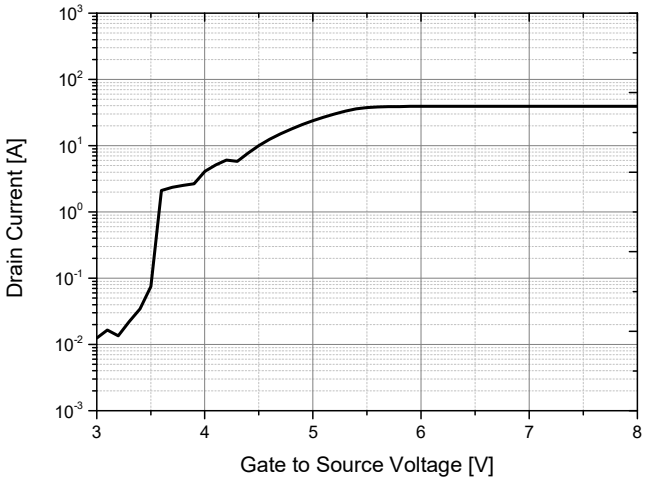


Figure 2. Transfer Characteristics

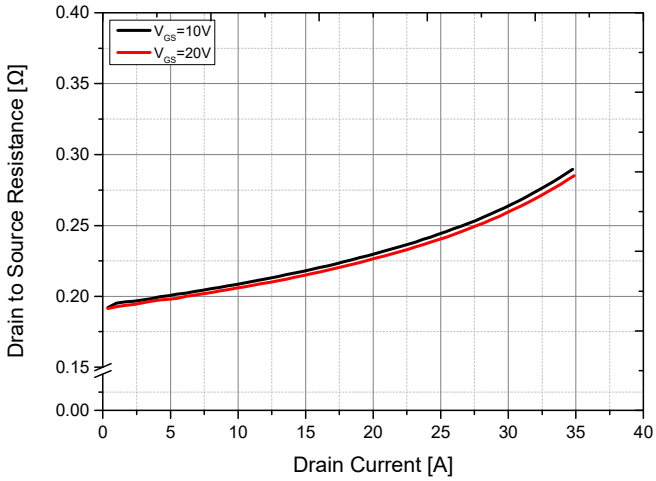


Figure 3. Drain to Source Resistance vs Drain Current

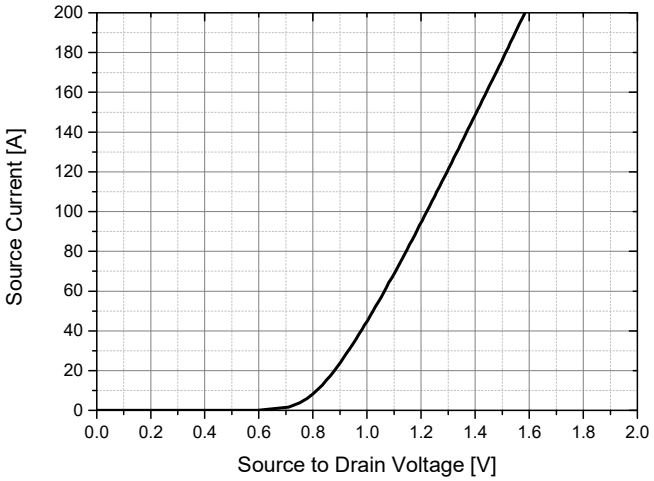


Figure 4. Body Forward Voltage Variation vs Source Current and Temperature

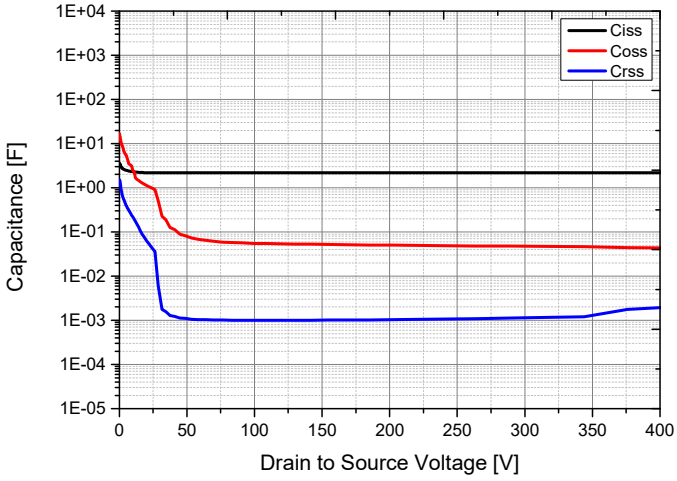


Figure 5. Capacitance Characteristics

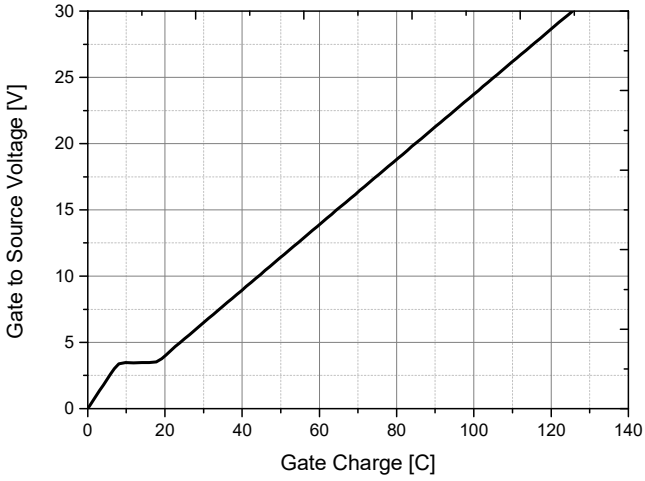


Figure 6. Gate Charge Characteristics

Typical Characteristics

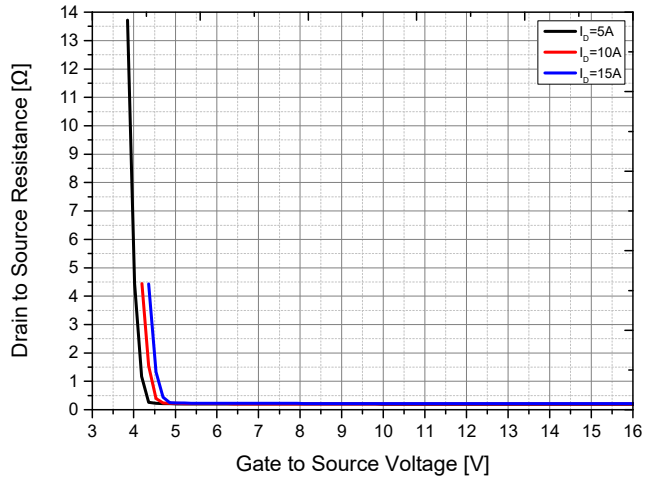


Figure 7. Drain to Source Resistance vs Gate to Source Voltage

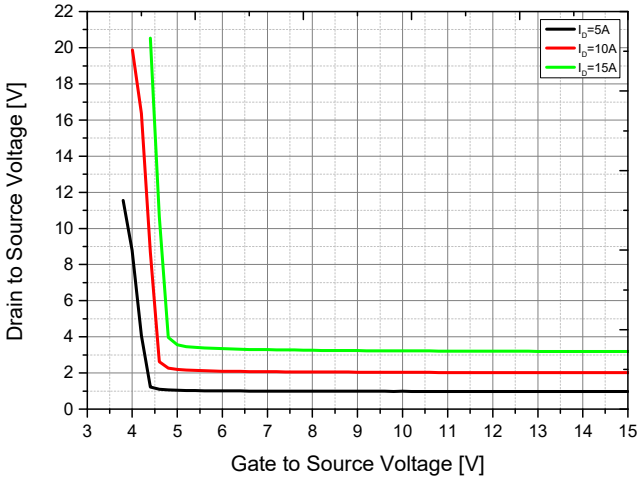


Figure 8. Drain to Source Voltage vs Gate to Source Voltage

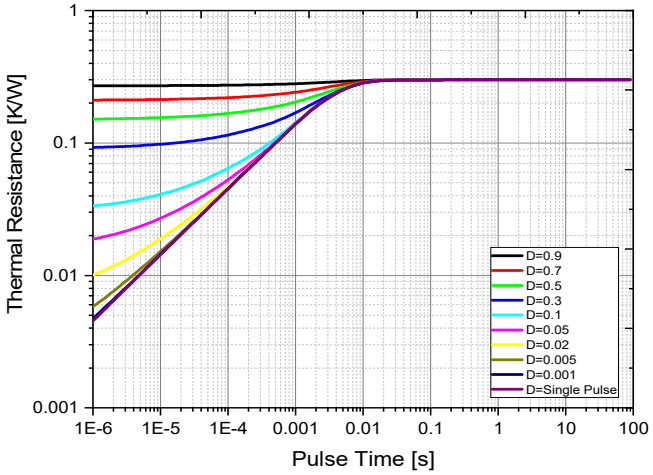


Figure 9. Transient Thermal Response Curve

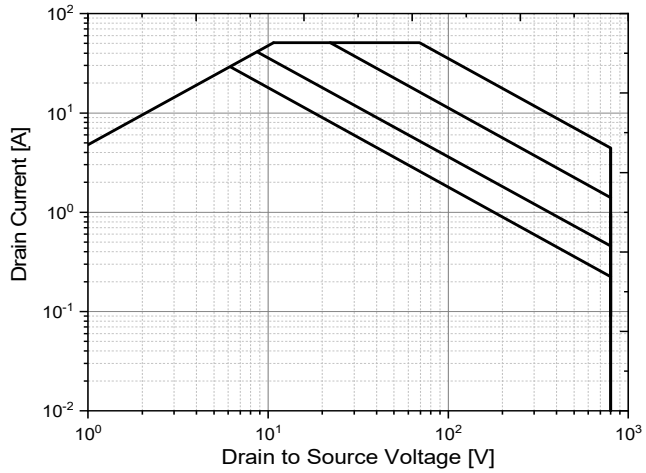
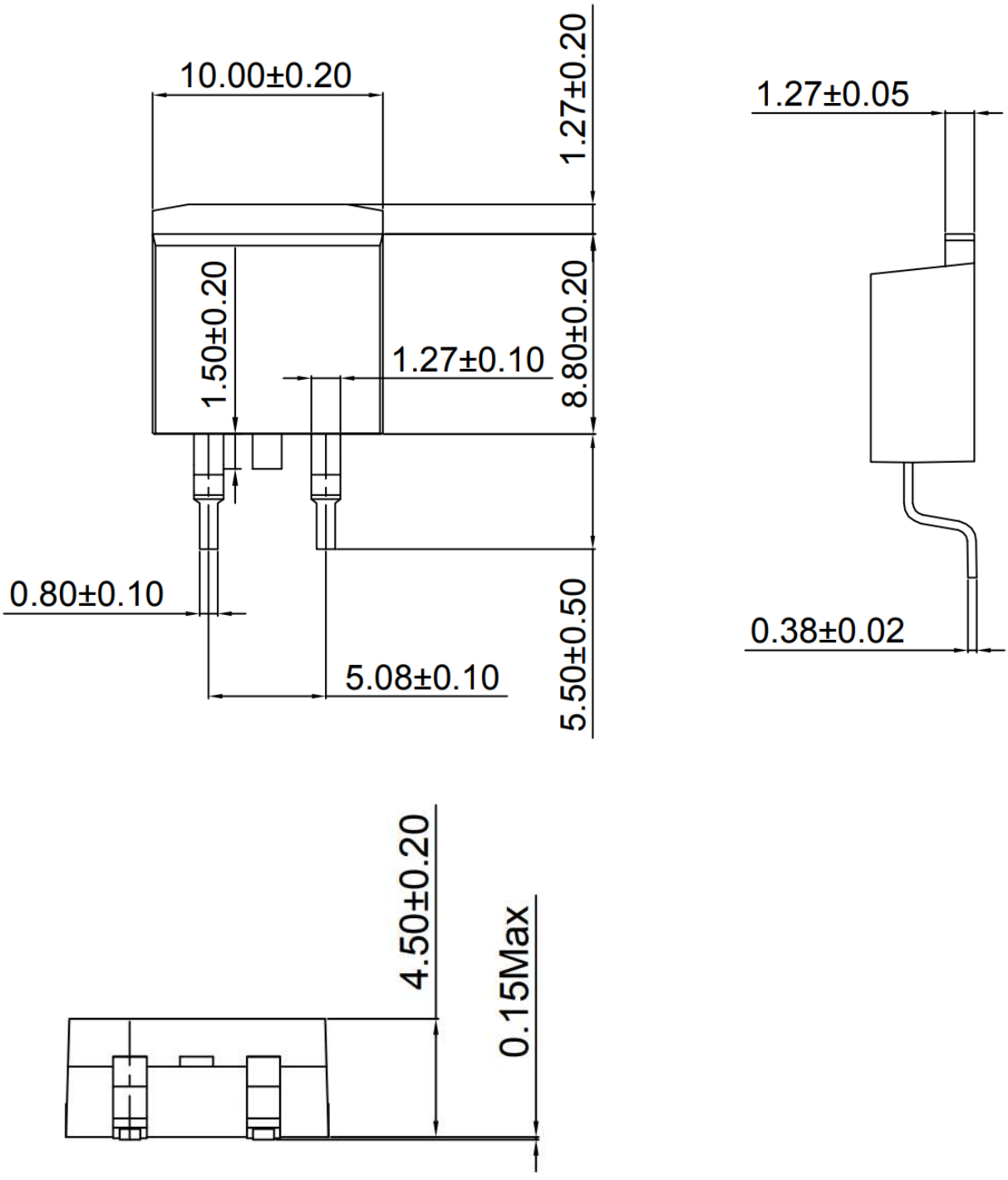


Figure 10. Safe Operating Area

Package Outline

[Unit : mm]



Revision History

Version	Data of release	Description of changes
1.0	2024-12-31	Release Datasheet