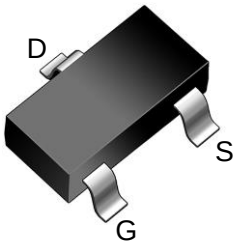
850V Depletion-Mode Power MOSFET

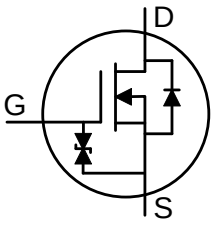
General Features

- Depletion Mode (Normally On)
- ESD Improved Capability
- Fast Switching Speed
- High Breakdown Voltage: 850V
- Small Package Size: SOT-23
- RoHS Compliant
- Halogen-free Available

BV_{DSX}	$R_{DS(ON)(TYP.)}$	I_D
850V	200Ω	10mA

SOT-23





Applications

- Normally-On Switches
- Start-up Circuits
- Solid State Relays
- Telecommunications
- Power Supply
- Current Regulators
- Ignition Modules

Ordering Information

Part Number	Package	Marking	Remark
DMZ85200E	SOT-23	85200	Halogen Free

Absolute Maximum Ratings

T_A=25℃ unless otherwise specified

Symbol	Parameter	DMZ85200E	Unit
V_{DSX}	Drain-to-Source Voltage [1]	850	V
I_D	Continuous Drain Current	10	mA
I_{DM}	Pulsed Drain Current [2]	40	
P_D	Power Dissipation	0.5	W
V_{GS}	Gate-to-Source Voltage	±20	V
T_L	Soldering Temperature Distance of 1.6mm from case for 10 seconds	300	℃
T_J & T_{STG}	Operating and Storage Temperature Range	-55 to 150	

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	DMZ85200E	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	250	℃/W

Electrical Characteristics

OFF Characteristics

T_A=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSX}	Drain-to-Source Breakdown Voltage	850	--	--	V	V_{GS}=-10V, I_D=250μA
$I_{D(OFF)}$	Drain-to-Source Leakage Current	--	--	10	μA	V_{DS}=850V, V_{GS}=-10V
I_{GSS}	Gate-to-Source Leakage Current	--	--	20	μA	V_{GS}=20V, V_{DS}=0V
		--	--	-20		V_{GS}=-20V, V_{DS}=0V

ON Characteristics

T_A=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
I_{DSS}	Saturated Drain-to-Source Current	10	--	--	mA	V_{GS}=0V, V_{DS}=50V
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	200	--	Ω	V_{GS}=0V, I_D=10mA [3]
$V_{GS(OFF)}$	Gate-to-Source Cut-off Voltage	-1.2	--	-3.5	V	V_{DS}=3V, I_D=8μA
gfs	Forward Transconductance	--	32	--	mS	V_{DS}=20V, I_D=10mA

Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
C_{iss}	Input Capacitance	--	30.3	--	pF	V_{GS}=-5V V_{DS}=25V f=1.0MHz
C_{oss}	Output Capacitance	--	9.2	--		
C_{rss}	Reverse Transfer Capacitance	--	2.8	--		
Q_g	Total Gate Charge	--	1.57	--	nC	V_{GS}=-5V~5V V_{DS}=150V I_D=20mA
Q_{gs}	Gate-to-Source Charge	--	0.75	--		
Q_{gd}	Gate-to-Drain (Miller) Charge	--	0.38	--		

Resistive Switching Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(on)}$	Turn-on Delay Time	--	8.2	--	ns	V_{GS}=-5V~0V V_{DD}=150V I_D=20mA R_G=10Ω
t_{rise}	Rise Time	--	40	--		
$t_{d(off)}$	Turn-off Delay Time	--	48	--		
t_{fall}	Fall Time	--	752	--		

Source-Drain Diode Characteristics

T_A=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{SD}	Diode Forward Voltage	--	--	1.5	V	I_{SD}=10mA, V_{GS}=-10V

NOTE：

[1] T_J=+25℃ to +150℃
[2] Repetitive rating, pulse width limited by maximum junction temperature.
[3] Pulse width≤380μs; duty cycle≤2%.

Typical Characteristics

Figure 1. Maximum Power Dissipation vs. Case Temperature

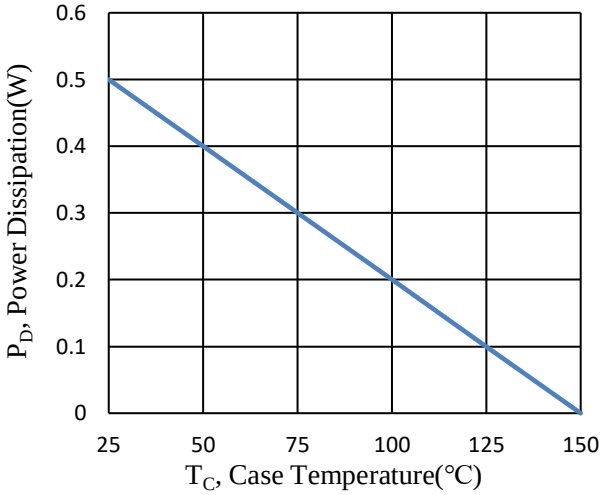


Figure 2. Maximum Continuous Drain Current vs. Case Temperature

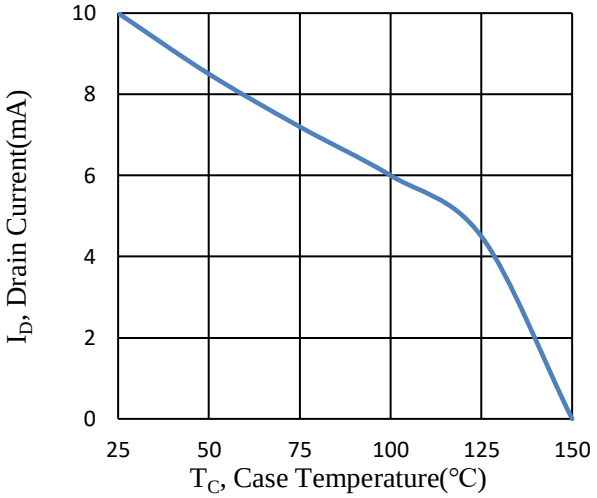


Figure 3.Typical Output Characteristics

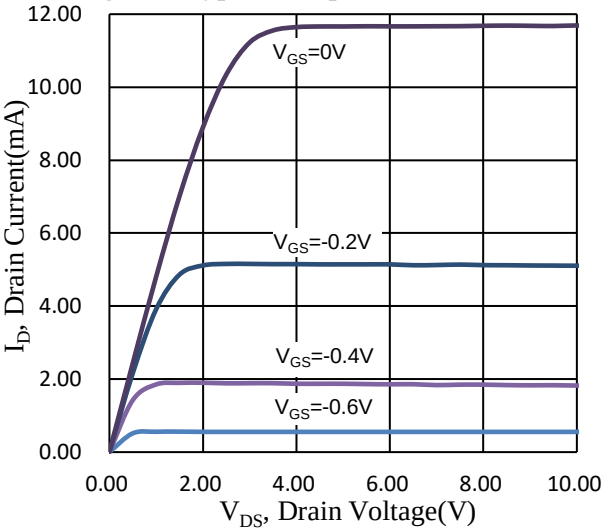


Figure 4. Typical Transfer Characteristics

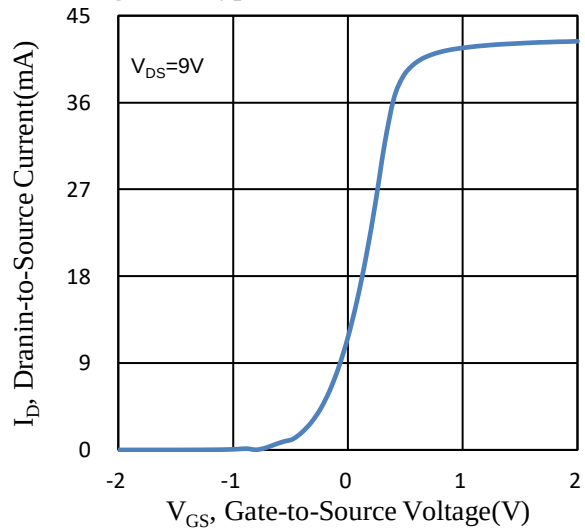


Figure 5. Typical Capacitance vs. Drain-to-Source Voltage

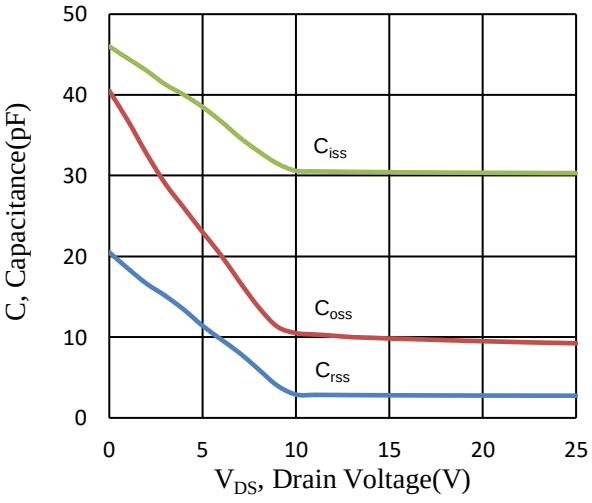
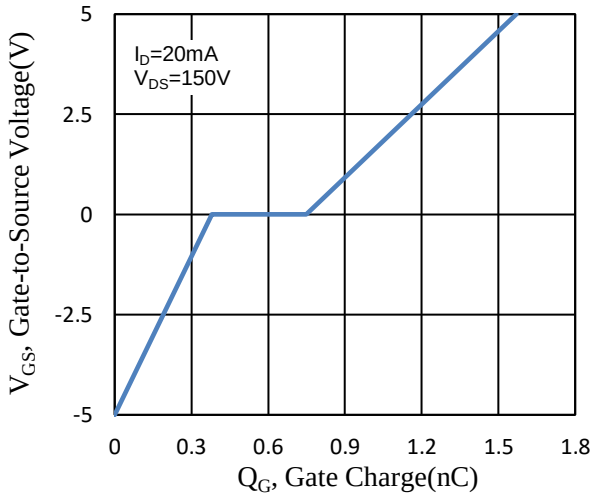
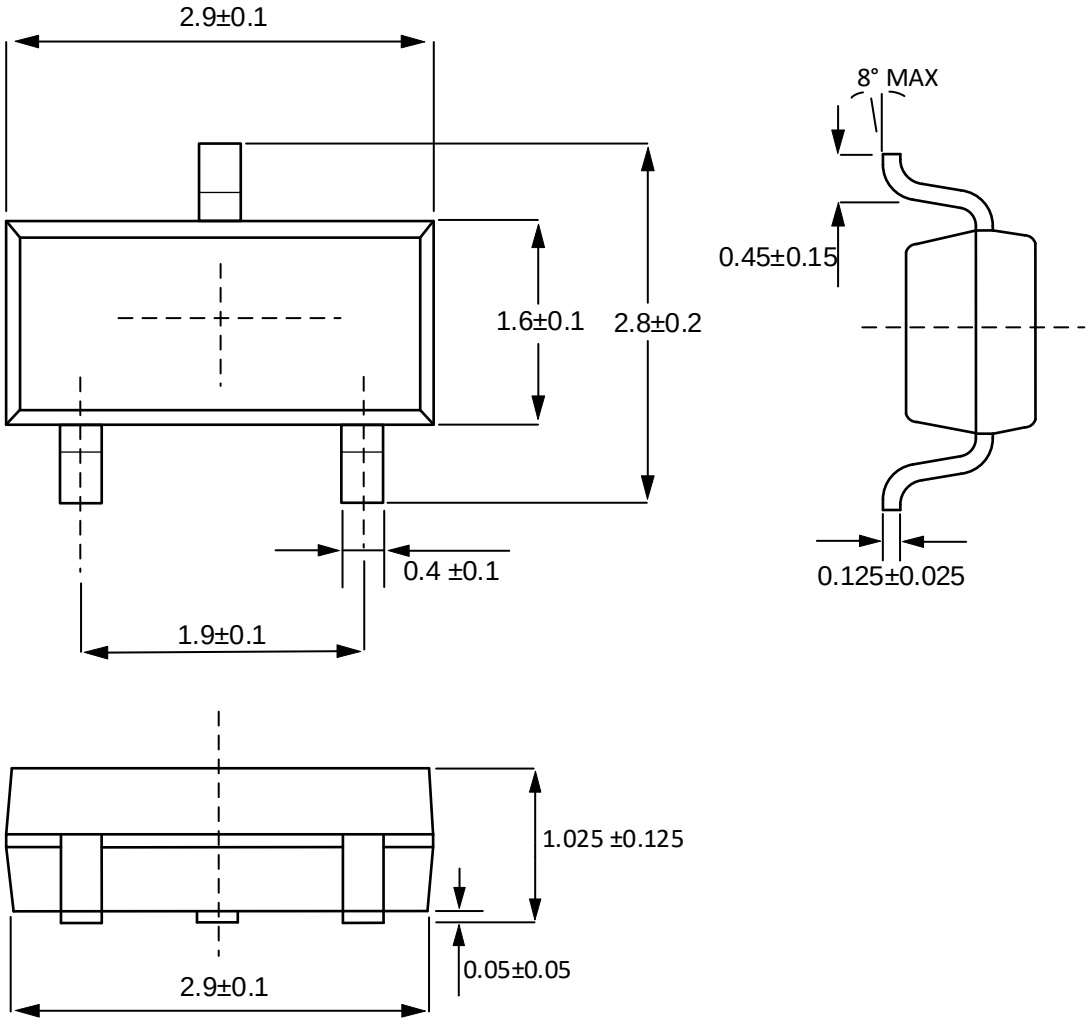


Figure 6. Typical Gate Charge vs. Gate-to-Source Voltage



Package Dimensions

SOT-23



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