

## 850V Depletion-Mode Power MOSFET

### General Features

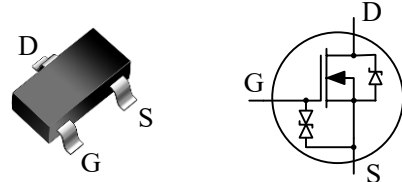
- Depletion Mode (Normally On)
- ESD Improved Capability
- Fast Switching Speed
- RoHS Compliant
- Halogen-free Available

$BV_{DSX}$	$R_{DS(ON)(TYP.)}$	$I_{DSS}$
<b>850V</b>	<b>200Ω</b>	<b>20mA</b>

SOT-23

### Applications

- Normally-On Switches
- Converters
- Protection Circuits
- Telecommunications
- Current Regulators
- Power Supply



### Ordering Information

Part Number	Package	Marking	Remark
DMZ85200E	SOT-23	85300	Halogen Free

### Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	DMZ85200E	Unit
$V_{DSX}$	Drain-to-Source Voltage <sup>[1]</sup>	850	V
$I_D$	Continuous Drain Current	20	mA
$I_{DM}$	Pulsed Drain Current <sup>[2]</sup>	80	
$P_D$	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	°C
$T_J$ and $T_{STG}$	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	K/W

## Electrical Characteristics

### OFF Characteristics

 $T_A = 25^\circ\text{C}$  unless otherwise specified

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

### ON Characteristics

 $T_A = 25^\circ\text{C}$  unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$I_{DSS}$	Saturated Drain-to-Source Current	20	--	--	mA	$V_{GS} = 0\text{V}$ , $V_{DS} = 25\text{V}$
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	200	300	$\Omega$	$V_{GS} = 0\text{V}$ , $I_D = 10\text{mA}$ [3]
$V_{GS(OFF)}$	Gate-to-Source Cut off Voltage	-1.5	--	-3.3	V	$V_{DS} = 9\text{V}$ , $I_D = 8\mu\text{A}$
gfs	Forward Transconductance	--	--	--	S	$V_{DS} = 20\text{V}$ , $I_D = 10\text{mA}$

### Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$C_{iss}$	Input Capacitance	--	--	--	pF	$V_{GS} = -10\text{V}$ $V_{DS} = 50\text{V}$ $f = 1.0\text{MHz}$
$C_{oss}$	Output Capacitance	--	--	--		
$C_{rss}$	Reverse Transfer Capacitance	--	--	--		
$Q_g$	Total Gate Charge	--	--	--	nC	$V_{GS} = -10\text{V} \sim 5\text{V}$ $V_{DS} = 150\text{V}$ , $I_D = 10\text{mA}$
$Q_{gs}$	Gate-to-Source Charge	--	--	--		
$Q_{gd}$	Gate-to-Drain (Miller) Charge	--	--	--		

### Resistive Switching Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(on)}$	Turn-on Delay Time	--	--	--	ns	$V_{GS} = -10\text{V} \sim 0\text{V}$ $V_{DD} = 50\text{V}$ , $I_D = 10\text{mA}$ $R_G = 10\Omega$
$t_{rise}$	Rise Time	--	--	--		
$t_{d(off)}$	Turn-off Delay Time	--	--	--		
$t_{fall}$	Fall Time	--	--	--		



**Source-Drain Diode Characteristics**

T<sub>A</sub>=25°C unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Units	Test Conditions
V <sub>SD</sub>	Diode Forward Voltage	--	--	1.2	V	I <sub>SD</sub> =10mA, V <sub>GS</sub> =-10V

**NOTE:**

[1] T<sub>J</sub>=+25°C to +150°C

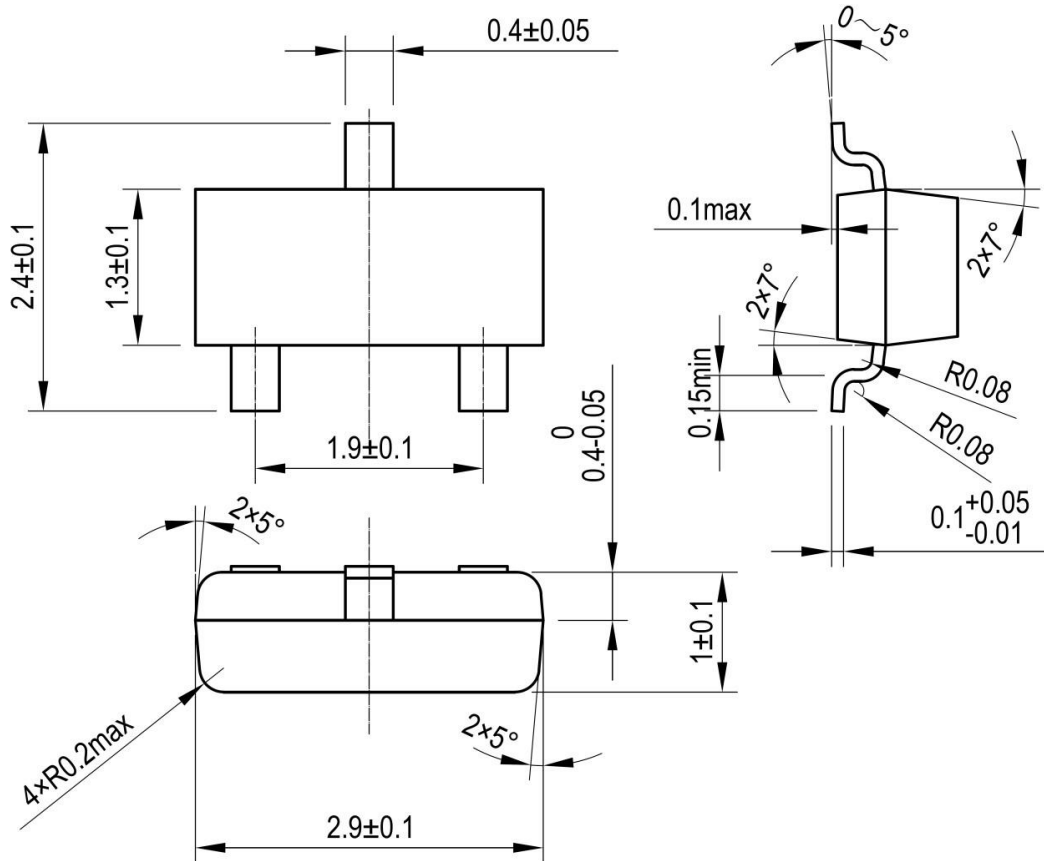
[2] Repetitive rating, pulse width limited by maximum junction temperature.

[3] Pulse width≤380μs; duty cycle≤2%.

Package Dimensions

SOT-23

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