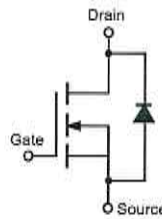


## Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free/RoHS Compliant (Note 2)**

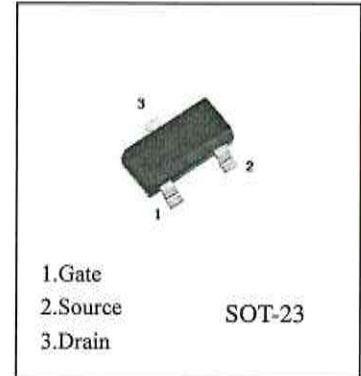
## Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking: (See Page 2) K6Z
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approximate)



## MMBF170

N-Channel MOSFET



## Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	MMBF170	Units
Drain-Source Voltage	V <sub>DSS</sub>	60	V
Drain-Gate Voltage R <sub>GS</sub> ≤ 1.0MΩ	V <sub>DGR</sub>	60	V
Gate-Source Voltage	V <sub>GSS</sub>	±20 ±40	V
Drain Current (Note 1)	I <sub>D</sub>	500 800	mA
Total Power Dissipation (Note 1)	P <sub>d</sub>	300 1.80	mW mW/°C
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	417	K/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

Note: 1. Device mounted on FR-5 PCB 1.0 x 0.75 x 0.062 inch pad layout as shown on Diodes, Inc. suggested pad layout AP02001,  
2. No purposefully added lead.

**MMBF170**
**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 3)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	60	70	—	V	$V_{GS} = 0V, I_D = 100\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1.0	$\mu A$	$V_{DS} = 60V, V_{GS} = 0V$
Gate-Body Leakage	$I_{GSS}$	—	—	$\pm 10$	nA	$V_{GS} = \pm 15V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.8	2.1	3.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	—	5.0 5.3	$\Omega$	$V_{GS} = 10V, I_D = 200mA$ $V_{GS} = 4.5V, I_D = 50mA$
Forward Transconductance	$g_{FS}$	80	—	—	mS	$V_{DS} = 10V, I_D = 0.2A$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iBS}$	—	22	40	pF	$V_{DS} = 10V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	$C_{oBS}$	—	11	30	pF	
Reverse Transfer Capacitance	$C_{rBS}$	—	2.0	5.0	pF	
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Time	$t_{on}$	—	—	10	ns	$V_{DD} = 25V, I_D = 0.5A,$ $V_{GS} = 10V, R_{GEN} = 50\Omega$
Turn-Off Time	$t_{off}$	—	—	10	ns	

Notes: 3. Short duration test pulse used to minimize self-heating effect.