

N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

Low On-Resistance: R_{DS(ON)}
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: UL Flammability Classification Rating 94V-0

Moisture sensitivity: Level 1 per J-STD-020C

Terminals: Solderable per MIL-STD-202, Method 208

Lead Free Plating (Matte Tin Finish annealed

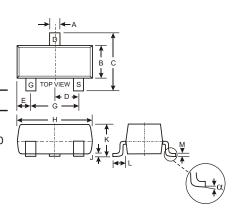
over Alloy 42 leadframe).

Terminal Connections: See Diagram

Marking (See Page 2): K7B

Ordering & Date Code Information: See Page 2

Weight: 0.008 grams (approx.)



SOT-23									
Dim	Dim Min Max								
Α	0.37	0.51							
В	1.20	1.40							
С	2.30	2.50							
D	0.89	1.03							
Е	0.45	0.60							
G	1.78	2.05							
Н	2.80	3.00							
J	0.013	0.10							
K	0.903	1.10							
L	0.45	0.61							
M	0.085	0.180							
	8								
All Dimensions in mm									

Diodes Incorporated

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units	
Drain-Source Voltage		V _{DSS}	60	V
Drain-Gate Voltage R _{GS} 1.0M		V_{DGR}	60	V
Gate-Source Voltage Continuous Pulsed		V_{GSS}	±20 ±40	V
Drain Current Continuous		I _D	240	mA
Total Power Dissipation (Note 1)		P_d	300	mW
Thermal Resistance, Junction to Ambient		R _{JA}	417	°C/W
Operating and Storage Temperature Ra	ng and Storage Temperature Range		-55 to +150	°C

Note: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

2. No purposefully added lead.



Electrical Characteristics @ T_A = 25 C unless otherwise specified

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 3)							
Drain-Source Breakdown Voltage		BV _{DSS}	60	70		V	V _{GS} = 0V, I _D = 10 A
Zero Gate Voltage Drain Current	@ T _C = 25°C @ T _C = 125°C	I _{DSS}			1.0 500	μΑ	V _{DS} = 60V, V _{GS} = 0V
Gate-Body Leakage		I _{GSS}			±10	nA	$V_{GS} = \pm 15V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 3)							
Gate Threshold Voltage		V _{GS(th)}	1.0		2.5	V	$V_{DS} = V_{GS}, I_{D} = 250 A$
Static Drain-Source On-Resistance	@ T _j = 25°C	R _{DS} (ON)		1.6 2.0	3 4		$V_{GS} = 10V, I_D = 250mA$ $V_{GS} = 4.5V, I_D = 200mA$
On-State Drain Current		I _{D(ON)}	0.8	1.0		Α	V _{GS} = 10V, V _{DS} = 7.5V
Forward Transconductance		g _{FS}	80			mS	V _{DS} =10V, I _D = 0.2A
DYNAMIC CHARACTERISTICS							
Input Capacitance		C _{iss}		22	50	pF	
Output Capacitance	Output Capacitance			11	25	pF	$V_{DS} = 25V, V_{GS} = 0V$ f = 1.0MHz
Reverse Transfer Capacitance		C _{rss}		2.0	5.0	pF]
SWITCHING CHARACTERISTICS							
Turn-On Delay Time		t _{D(ON)}		7.0	20	ns	$V_{DD} = 30V, I_D = 0.2A,$
Turn-Off Delay Time		t _{D(OFF)}		11	20	ns	$R_L = 150$, $V_{GEN} = 10V$, $R_{GEN} = 25$

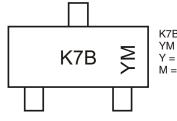
Ordering Information (Note 4)

Device	Packaging	Shipping
2N7002E-7-F	SOT-23	3000/Tape & Reel

Notes:

- 3. Short duration test pulse used to minimize self-heating effect.
- 4. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



K7B = Product Type Marking Code YM = Date Code Marking

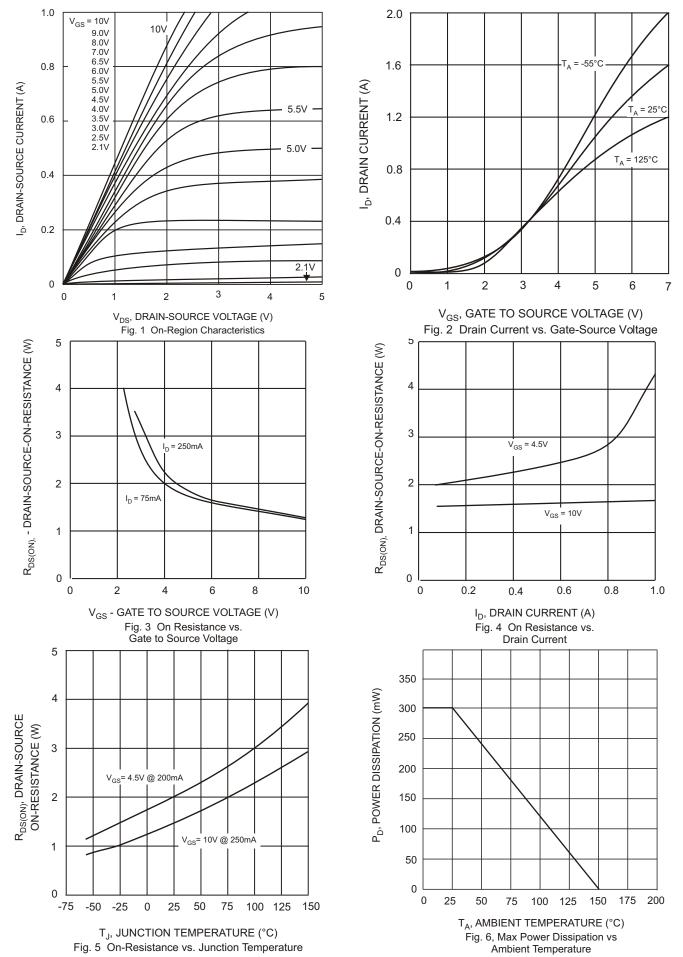
Y = Year ex: P = 2003 M = Month ex: 9 = September

Date Code Key

Year	2003	2004	2005	2006	2007	2008	2009
Code	Р	R	S	Т	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D







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