

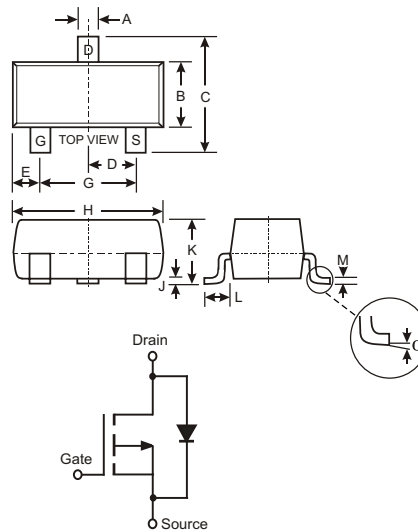
P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Available in Lead Free/RoHS Compliant Version (Note 3)

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
- Also Available in Lead Free Plating (Matte Tin Finish). Please see Ordering Information, Note 5, on Page 2
- Terminal Connections: See Diagram
- Marking (See Page 2): K84
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approx.)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

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

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	-50	V
Drain-Gate Voltage $R_{GS} \leq 20K\Omega$	V_{DGR}	-50	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Note 1)	I_D	-130	mA
Total Power Dissipation (Note 1)	P_d	300	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 2)						
Drain-Source Breakdown Voltage	BV_{DSS}	-50	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-15 -60 -100	μA μA nA	$V_{DS} = -50V, V_{GS} = 0V, T_J = 25^\circ\text{C}$ $V_{DS} = -50V, V_{GS} = 0V, T_J = 125^\circ\text{C}$ $V_{DS} = -25V, V_{GS} = 0V, T_J = 25^\circ\text{C}$
Gate-Body Leakage	I_{GSS}	—	—	± 10	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(th)}$	-0.8	—	-2.0	V	$V_{DS} = V_{GS}, I_D = -1mA$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	—	10	Ω	$V_{GS} = -5V, I_D = -0.100A$
Forward Transconductance	g_{FS}	0.05	—	—	S	$V_{DS} = -25V, I_D = -0.1A$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	—	45	pF	$V_{DS} = -25V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	C_{oss}	—	—	25	pF	
Reverse Transfer Capacitance	C_{rss}	—	—	12	pF	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{D(on)}$	—	10	—	ns	$V_{DD} = -30V, I_D = -0.27A,$ $R_{GEN} = 50\Omega, V_{GS} = -10V$
Turn-Off Delay Time	$t_{D(off)}$	—	18	—	ns	

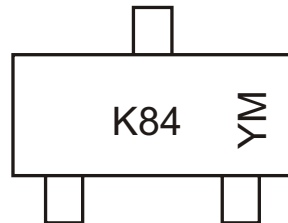
Note: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. Short duration test pulse used to minimize self-heating effect.
 3. No purposefully added lead.

Ordering Information (Note 4)

Device	Packaging	Shipping
BSS84-7	SOT-23	3000/Tape & Reel

- Notes:
- For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
 - For Lead Free/RoHS Compliant version part number, please add "-F" suffix to part number above.
Example: BSS84-7-F.

Marking Information

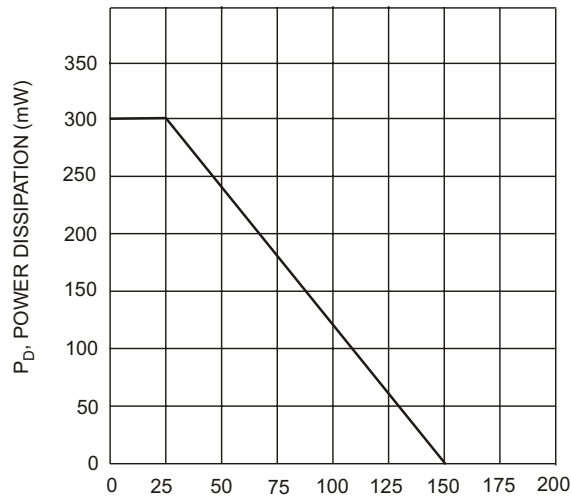


K84 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

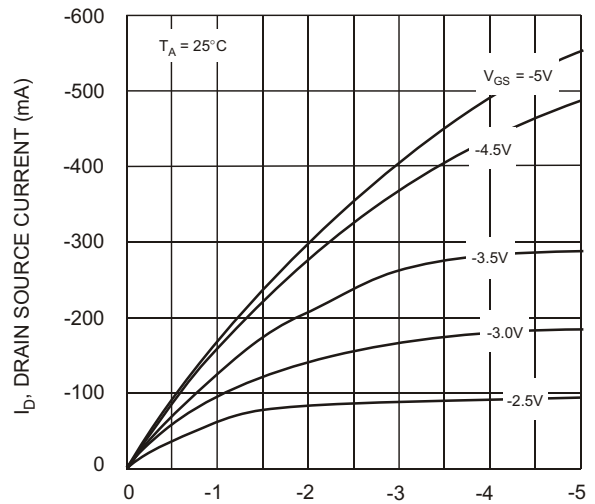
Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Code	J	K	L	M	N	P	R	S	T	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	O	N	D



T_A, AMBIENT TEMPERATURE (°C)
 Fig. 1, Max Power Dissipation vs Ambient Temperature



V_{GS} = -5V
 -4.5V
 -3.5V
 -3.0V
 -2.5V
 T_A = 25°C
 V_{DS}, DRAIN SOURCE (V)
 Fig. 2, Drain Source Current vs. Drain Source Voltage

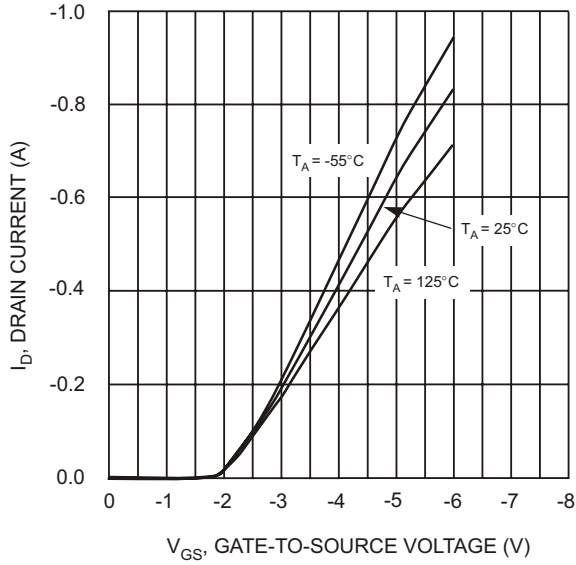


Fig. 3, Drain Current vs. Gate Source Voltage

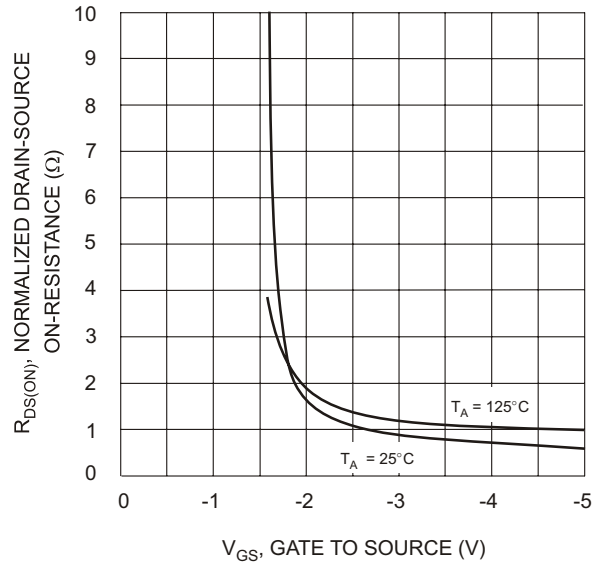


Fig. 4, On Resistance vs. Gate Source Voltage

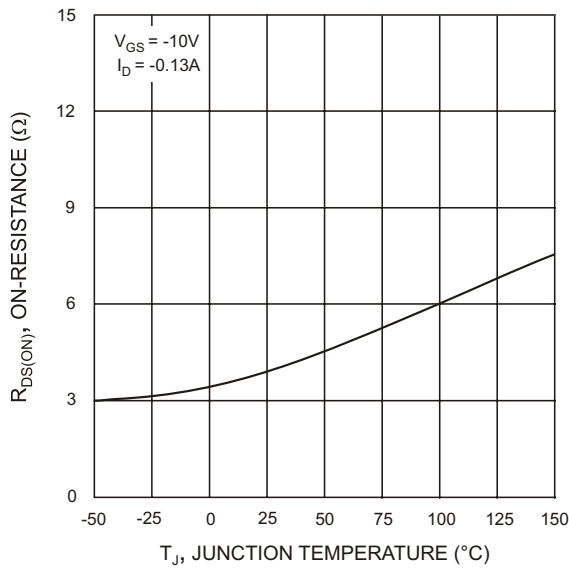


Fig. 5, On-Resistance vs. Junction Temperature

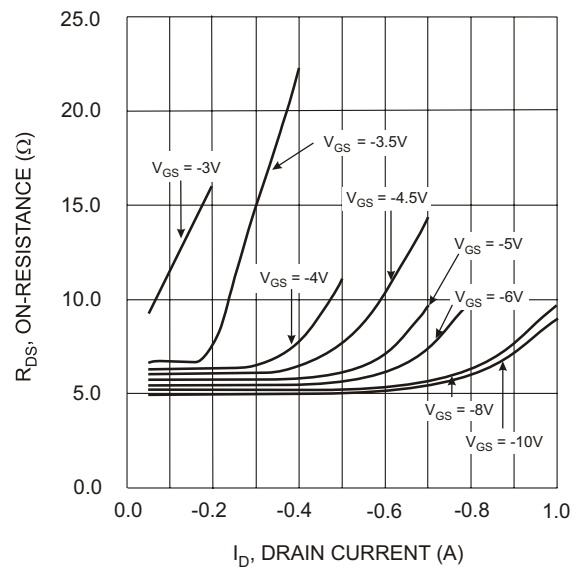


Fig. 6, On-Resistance vs. Drain Current