

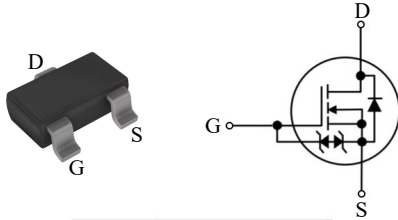


MMBT7002LVKH

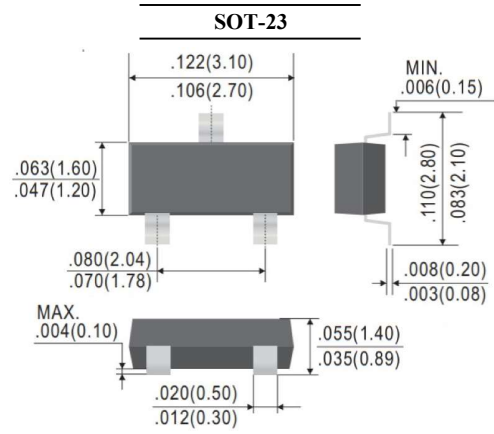
N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- For low voltage, low current switching applications
- ESD protection up to 2 kV
- Suffix "H" indicates Halogen-free parts, ex. MMBT7002LVKH



Pin	Description
G	Gate
S	Source
D	Drain



Dimensions in inch and (millimeter)

Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Note 1)	I_D	350 245	mA
		at $T_A = 25^\circ\text{C}$ at $T_A = 100^\circ\text{C}$	
Pulsed Drain Current	I_{DM}	2	A
		at $t_p \leq 300\mu\text{s}$	
Power Dissipation (Note 2)	P_D	370	mW
		at $T_A = 25^\circ\text{C}$	
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	340 285	$^\circ\text{C}/\text{W}$
		(Note 2) (Note 1)	
Operating and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	$^\circ\text{C}$

Note :

1. Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for drain 1 cm^2
2. Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.



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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	$I_D = 10\mu\text{A}$	V_{DSS}	60	-	-	V
Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	$V_{GS(th)}$	1.1	-	2.1	V
Zero Gate Voltage Drain Current	$V_{DS} = 60\text{V}, T_J = 25^\circ\text{C}$	I_{DSS}	-	-	1	μA
	$V_{DS} = 60\text{V}, T_J = 150^\circ\text{C}$		-	-	10	
Gate-Body Leakage Current	$V_{GS} = \pm 20\text{V}$	I_{GSS}	-	-	± 10	μA
Drain-Source On-State Resistance (Note 1)	$V_{GS} = 5\text{V}, I_D = 50\text{mA}$	$R_{DS(on)}$	-	-	2.0	Ω
	$V_{GS} = 10\text{V}, I_D = 500\text{mA}$		-	-	1.6	
Forward Transconductance (Note 1)	$V_{DS} = 10\text{V}, I_D = 200\text{mA}$	g_{FS}	-	550	-	mS
Dynamic						
Input Capacitance	$V_{DS} = 10\text{V}, f = 1\text{MHz}$	C_{iss}	-	-	50	pF
Output Capacitance		C_{oss}	-	7	-	
Reverse Transfer Capacitance		C_{rss}	-	4	-	
Turn-On Delay Time	$V_{DD} = 50\text{V}, V_{GS} = 10\text{V},$ $R_L = 250\Omega, R_G = 6\Omega$	$t_{d(on)}$	-	-	10	nS
Turn-On Rise Time		t_r	-	6	-	
Turn-Off Delay Time		$t_{d(off)}$	-	-	24	
Turn-Off Fall Time		t_f	-	7	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	$I_S = 115\text{mA}$	V_{SD}	-	-	1.10	V
Body Diode Continuous Current	-	I_S	-	-	350	mA



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RATINGS AND CHARACTERISTIC CURVES

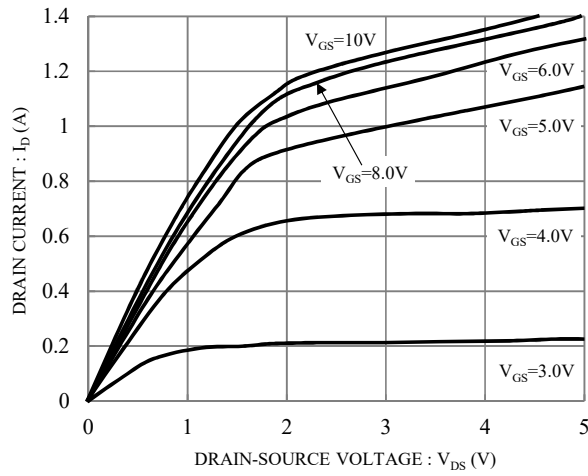


Fig.1 Typical output characteristics

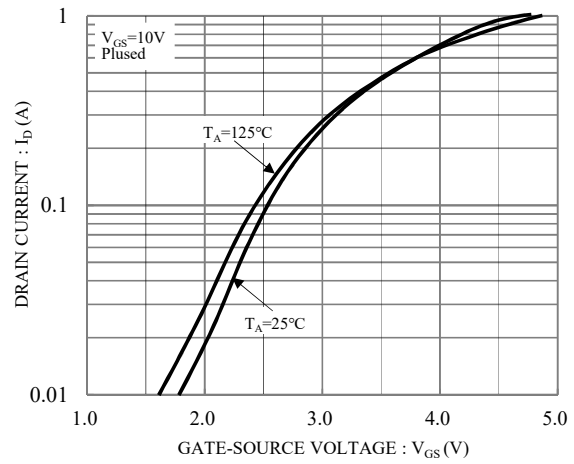


Fig.2 Typical transfer characteristics

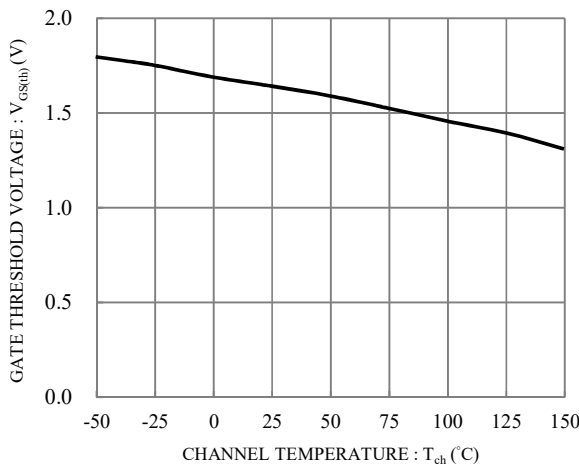


Fig.3 Gate threshold voltage vs. Channel temperature

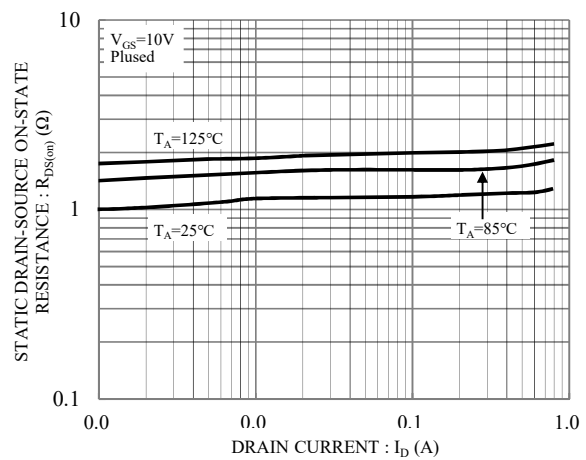


Fig.4 Static drain-source on-state resistance vs. drain current