



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

BM S3003 — P-Channel Silicon MOSFET — General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS(on)} = 5.0\text{m}\Omega$ (typ.)
- Input capacitance $C_{iss} = 13200\text{pF}$ (typ.)
- 4V drive

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		-60	V
Gate-to-Source Voltage	V_{GSS}		± 20	V
Drain Current (DC)	I_D		-78	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	-312	A
Allowable Power Dissipation	PD		2.0	W
		$T_c = 25^\circ\text{C}$	40	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	EAS		420	mJ
Avalanche Current *2	I_{AV}		-60	A

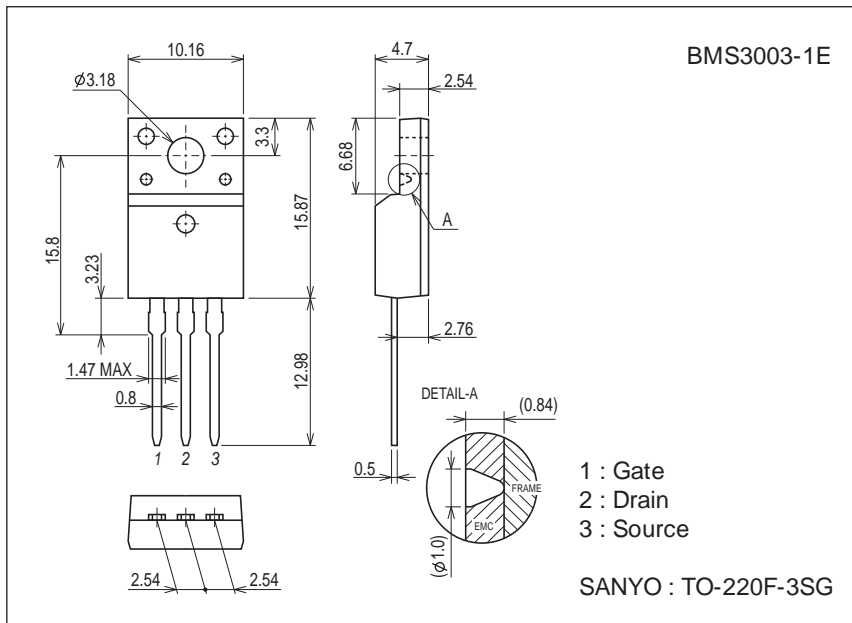
Note : *1 $V_{DD} = -36\text{V}$, $L = 100\mu\text{H}$, $I_{AV} = -60\text{A}$ (Fig.1)

*2 $L \leq 100\mu\text{H}$, Single pulse

Package Dimensions

unit : mm (typ.)

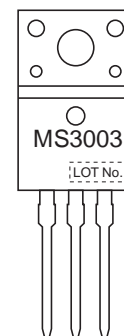
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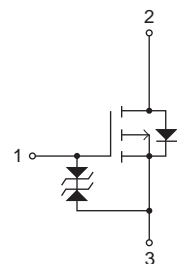
Product & Package Information

- Package : TO-220F-3SG
- JEITA, JEDEC : SC-67
- Minimum Packing Quantity : 50 pcs./magazine

Marking



Electrical Connection



BMS3003

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min.	typ.	max.	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1\text{mA}, V_{GS} = 0\text{V}$	-60			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -60\text{V}, V_{GS} = 0\text{V}$			-10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 16\text{V}, V_{DS} = 0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -10\text{V}, I_D = -1\text{mA}$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10\text{V}, I_D = -39\text{A}$		130		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -39\text{A}, V_{GS} = -10\text{V}$		5.0	6.5	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = -39\text{A}, V_{GS} = -4\text{V}$		6.5	9.0	$\text{m}\Omega$
Input Capacitance	C_{iss}			13200		pF
Output Capacitance	C_{oss}	$V_{DS} = -20\text{V}, f = 1\text{MHz}$		1300		pF
Reverse Transfer Capacitance	C_{rss}			950		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		90		ns
Rise Time	t_r			360		ns
Turn-OFF Delay Time	$t_{d(off)}$			1200		ns
Fall Time	t_f			680		ns
Total Gate Charge	Q_g				285	
Gate-to-Source Charge	Q_{gs}	$V_{DS} = -36\text{V}, V_{GS} = -10\text{V}, I_D = -78\text{A}$		35		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			70		nC
Diode Forward Voltage	V_{SD}	$I_S = -78\text{A}, V_{GS} = 0\text{V}$		-0.95	-1.5	V
Reverse Recovery Time	t_{rr}	See Fig.3		150		ns
Reverse Recovery Charge	Q_{rr}	$I_S = -78\text{A}, V_{GS} = 0\text{V}, di/dt = -100\text{A}/\mu\text{s}$		470		nC

Fig.1 Unclamped Inductive Switching Test Circuit

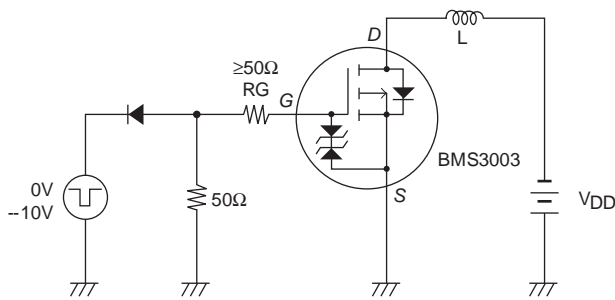


Fig.2 Switching Time Test Circuit

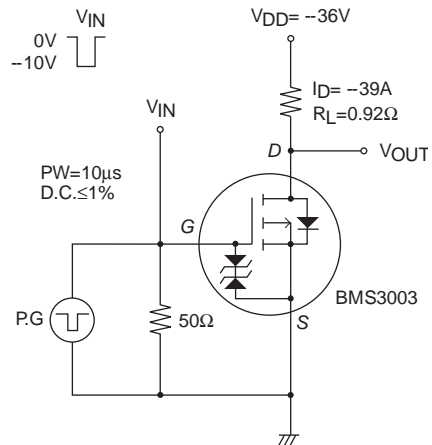
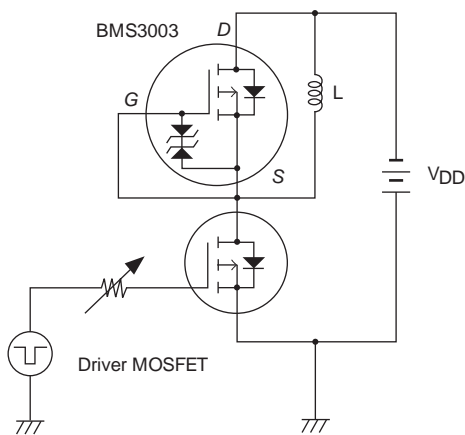
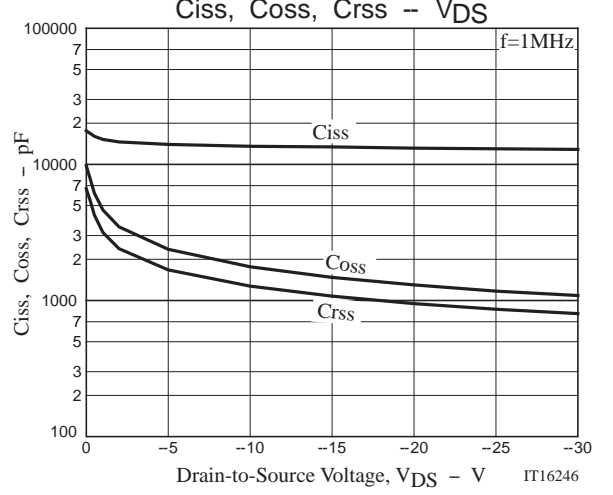
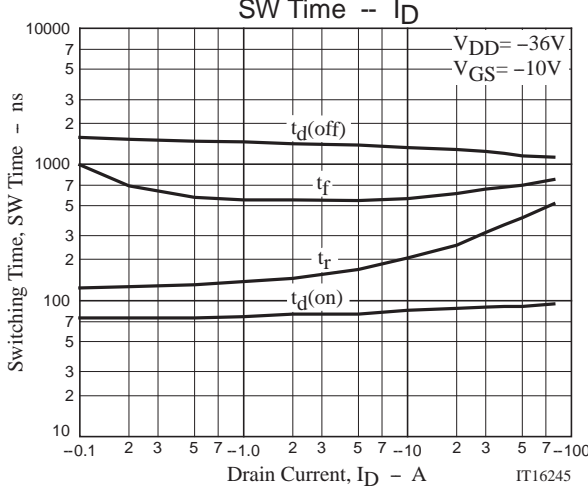
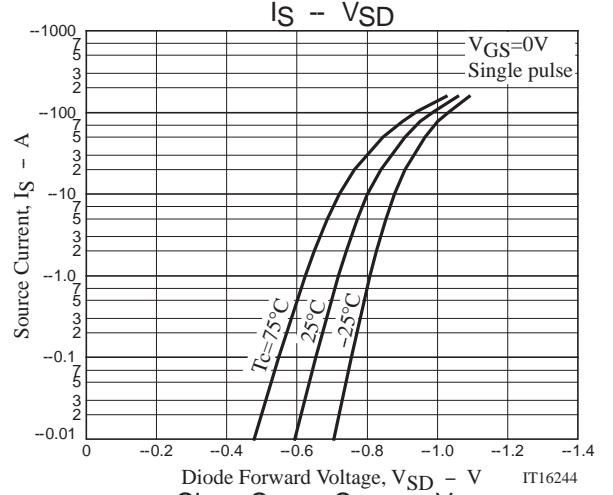
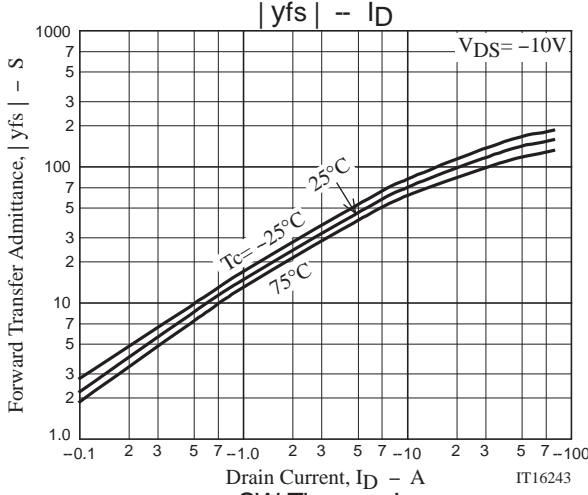
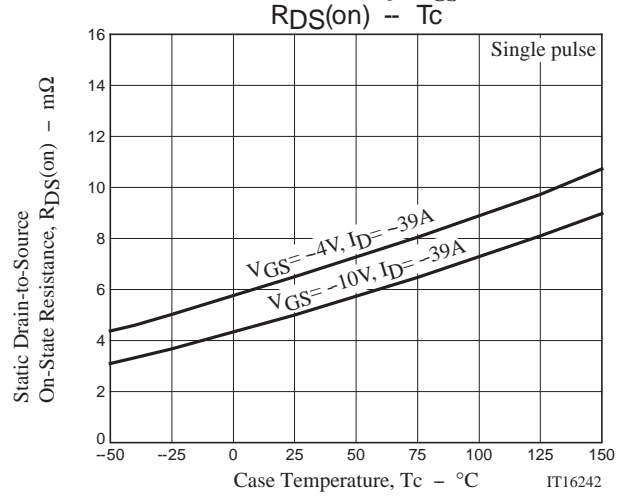
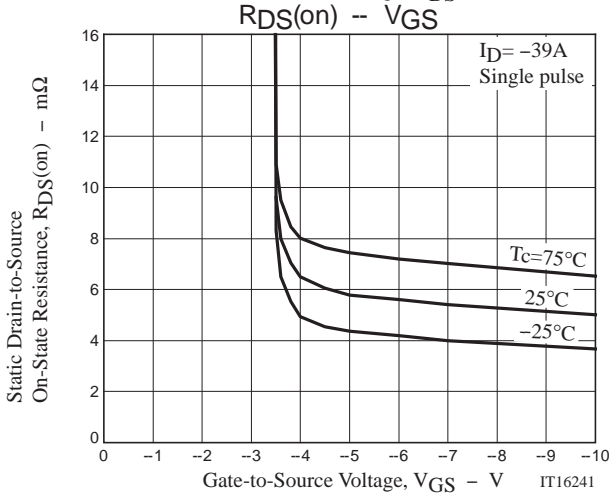
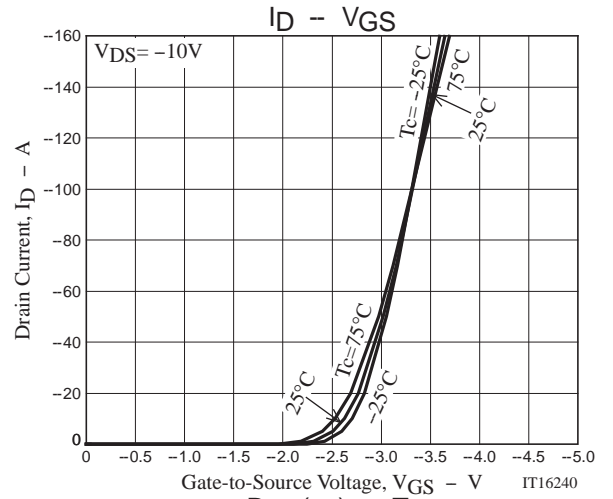
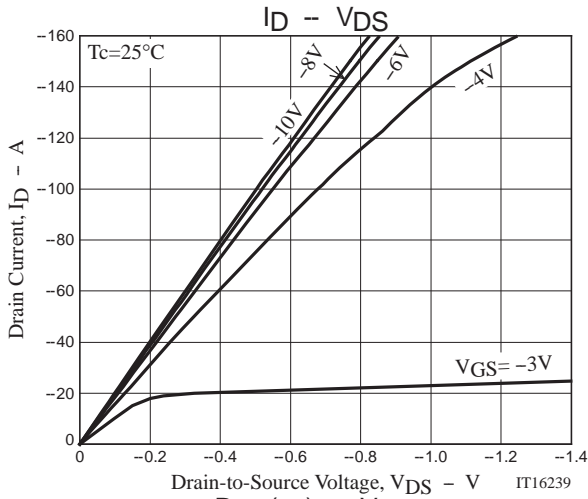


Fig.3 Reverse Recovery Time Test Circuit

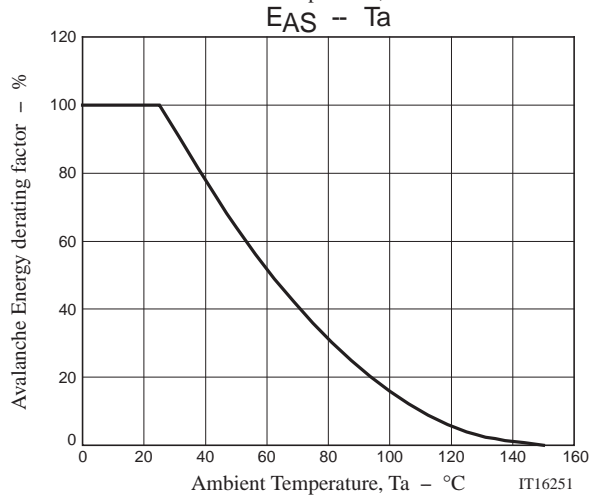
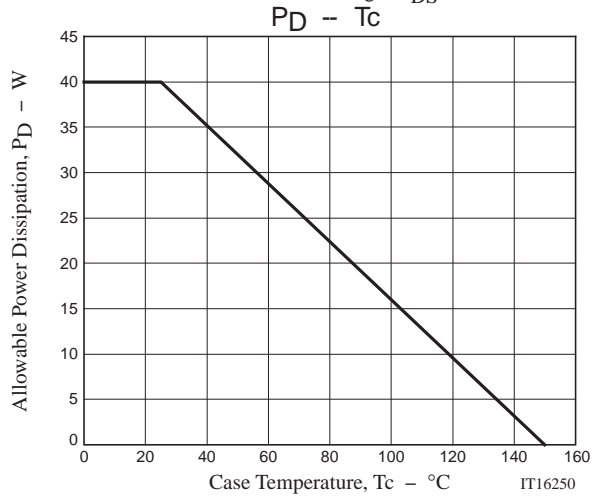
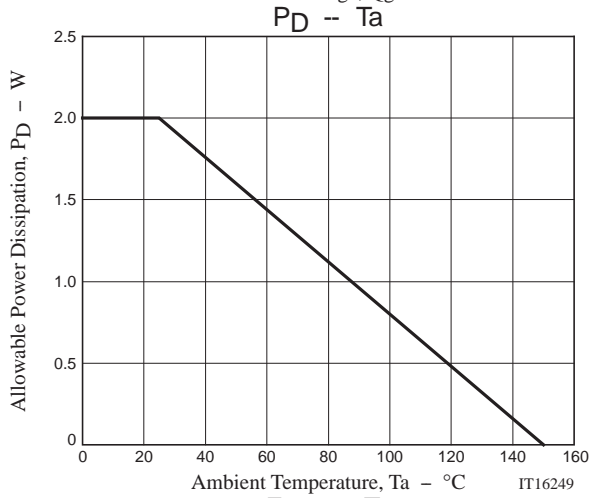
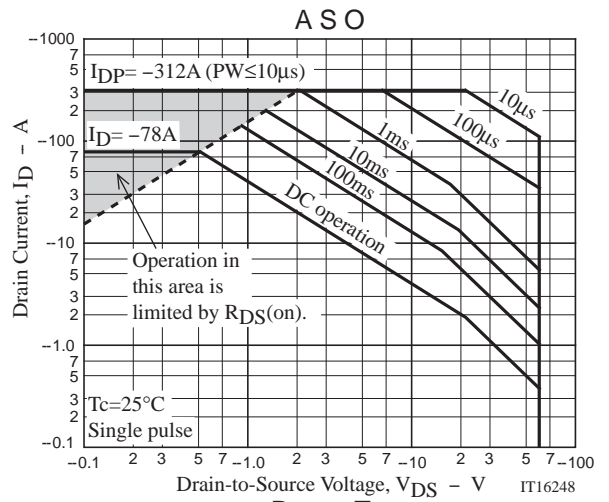
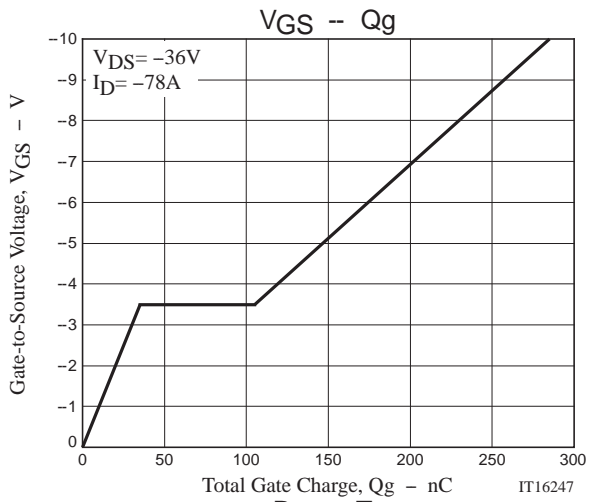


Ordering Information

Device	Package	Shipping	memo
BMS3003-1E	TO-220F-3SG	50pcs./magazine	Pb Free



BMS3003



BMS3003

Magazine Specification

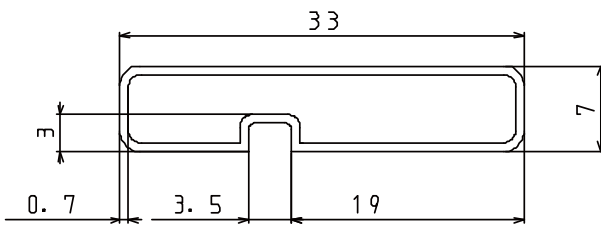
BMS3003-1E

1. Packing Format

Package Name	Magazine Name	Maximum Number of devices contained (pcs)			Packing format	
		Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-220F-3SG	TO-220F	50	1,000	4,000	SPD-0V0001 20 magazines contained Dimensions:mm (external) 568×150×55	SPT-081029 4 inner boxes contained Dimensions:mm (external) 590×225×178

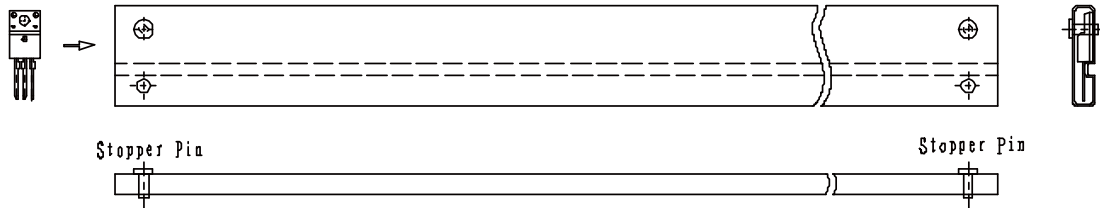
2. Magazine dimensions

(unit:mm)

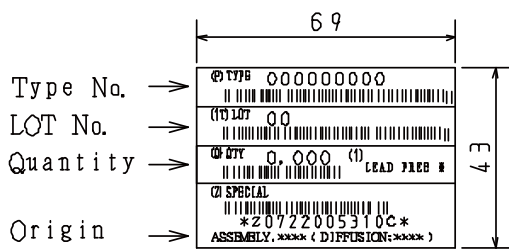


Tolerance=±0.3mm
 Thickness=0.7±0.2mm
 Length =532.5±2mm
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

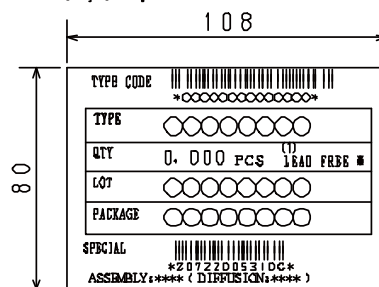


4. Inner box label (unit:mm)



5. Outer box label (unit:mm)

It is a label at the time of factory shipments.
 The form of a label may change in physical
 distribution process.



NOTE (1)

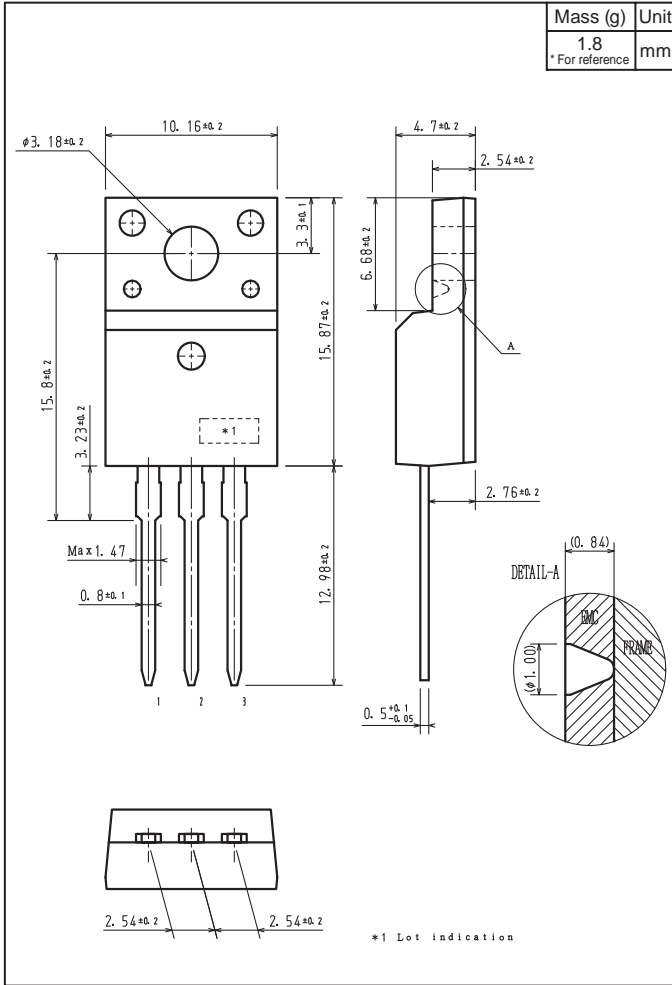
The LEAD FREE # description shows that the surface treatment of the terminal is lead free.

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

BMS3003

Outline Drawing

BMS3003-1E



Note on usage : Since the BMS3003 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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