



# 2SK3703

## N-Channel Power MOSFET 60V, 30A, 26mΩ, TO-220F-3SG

ON Semiconductor®

<http://onsemi.com>

### Features

- ON-resistance  $R_{DS(on)1}=20m\Omega$  (typ.)
- Input capacitance  $C_{iss}=1780pF$  (typ.)
- 4V drive

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		30	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	120	A
Allowable Power Dissipation	$P_D$		2.0	W
		$T_c=25^\circ C$	25	W
Channel Temperature	$T_{ch}$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		135	mJ
Avalanche Current *2	$I_{AV}$		30	A

Note : \*1  $V_{DD}=20V$ ,  $L=200\mu H$ ,  $I_{AV}=30A$  (Fig.1)

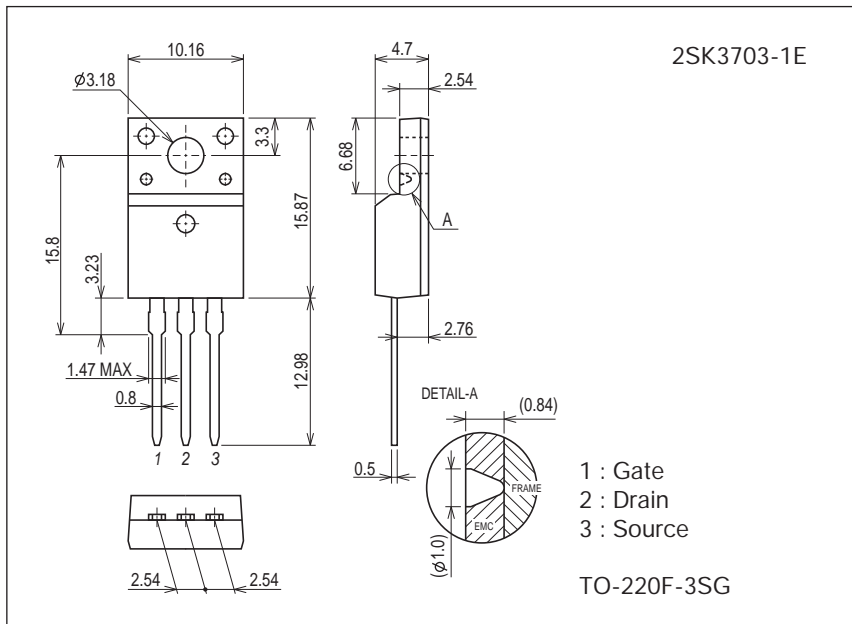
\*2  $L \leq 200\mu H$ , Single pulse

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

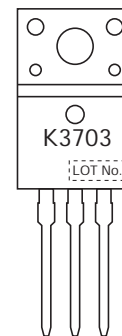
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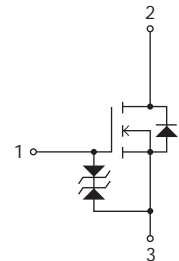
### Product & Package Information

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

### Marking



### Electrical Connection



# 2SK3703

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	60			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	1.2		2.6	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =15A	13	22		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =15A, V <sub>GS</sub> =10V		20	26	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =15A, V <sub>GS</sub> =4V		28	40	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, f=1MHz		1780		pF
Output Capacitance	C <sub>oss</sub>			266		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			197		pF
Turn-ON Delay Time	t <sub>d(on)</sub>			16.5		ns
Rise Time	t <sub>r</sub>	See Fig.2		110		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			166		ns
Fall Time	t <sub>f</sub>			144		ns
Total Gate Charge	Q <sub>g</sub>			40		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =10V, I <sub>D</sub> =30A		6.5		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>			11.5		nC
Diode Forward Voltage	V <sub>SD</sub>		I <sub>S</sub> =30A, V <sub>GS</sub> =0V		1.0	1.2

Fig.1 Avalanche Resistance Test Circuit

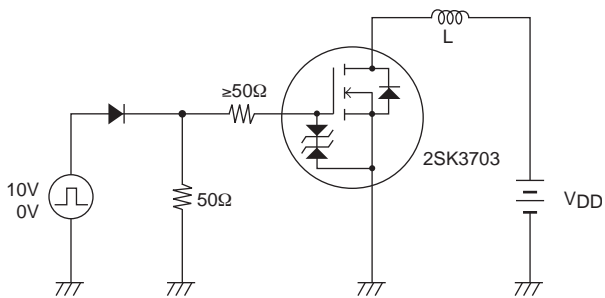
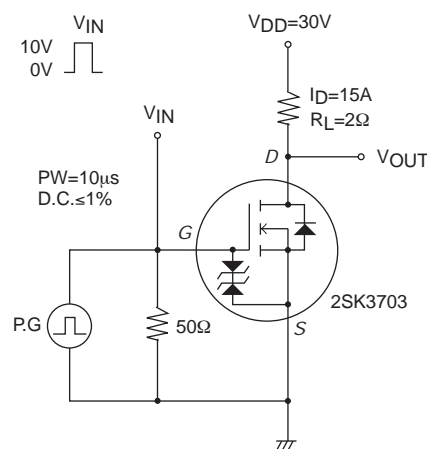
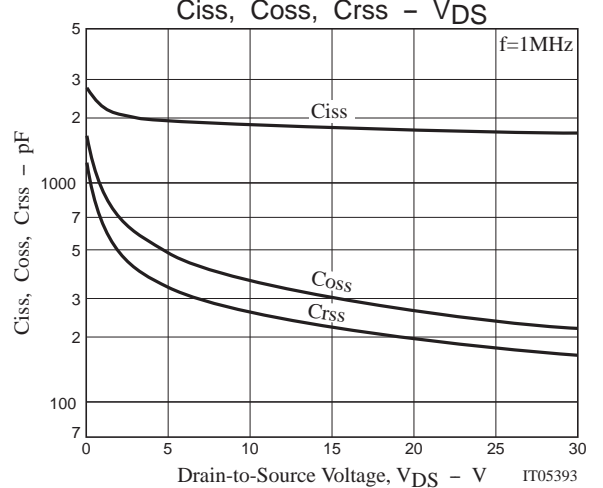
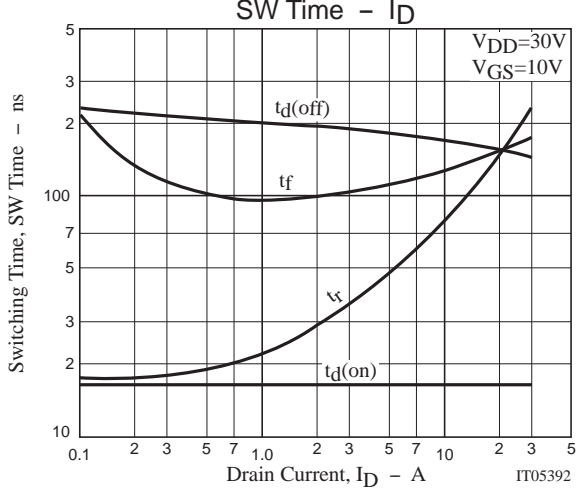
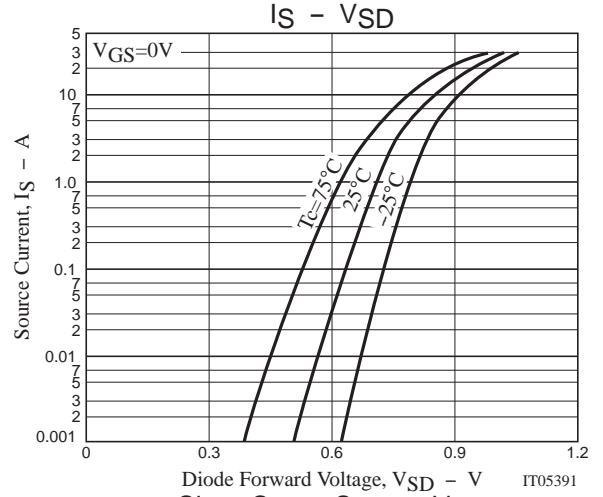
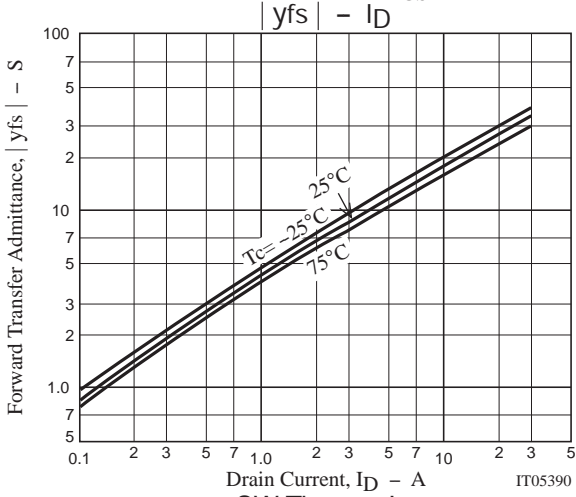
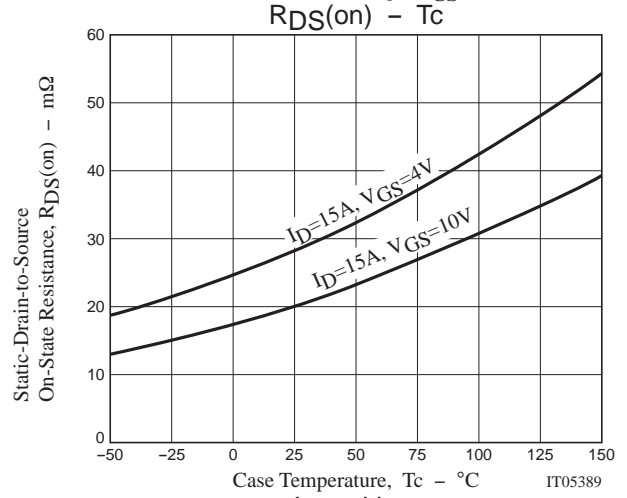
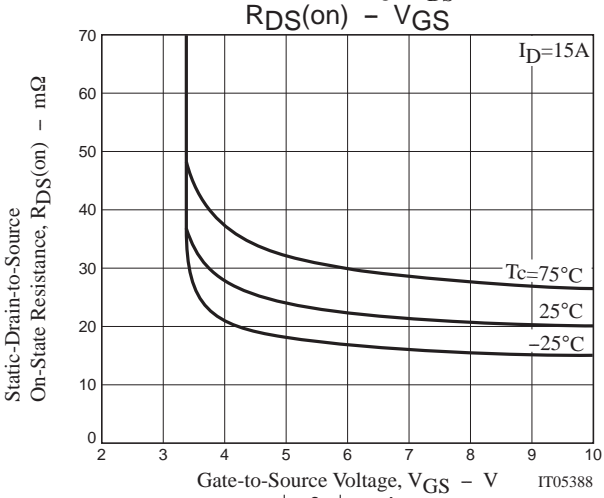
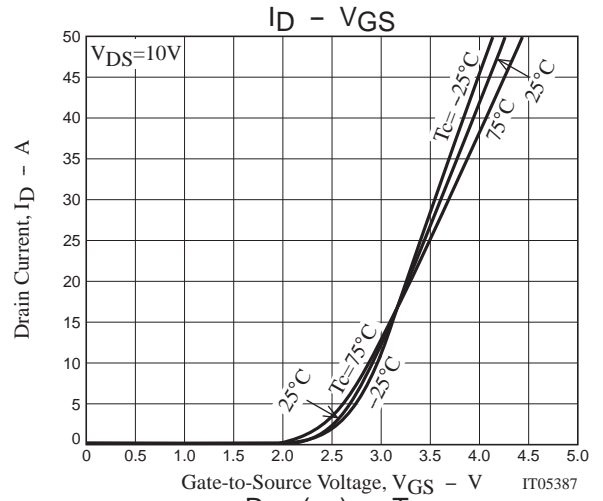
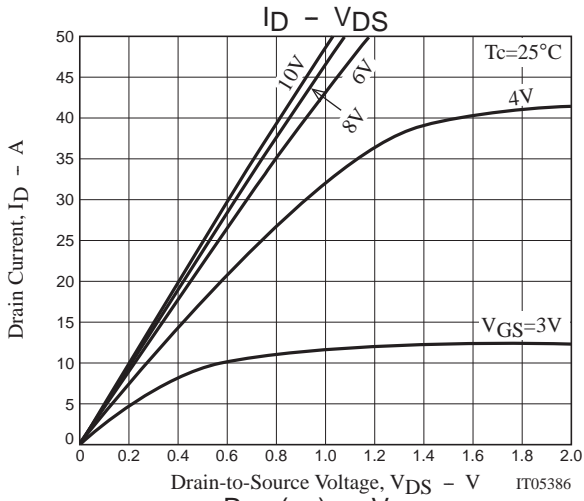


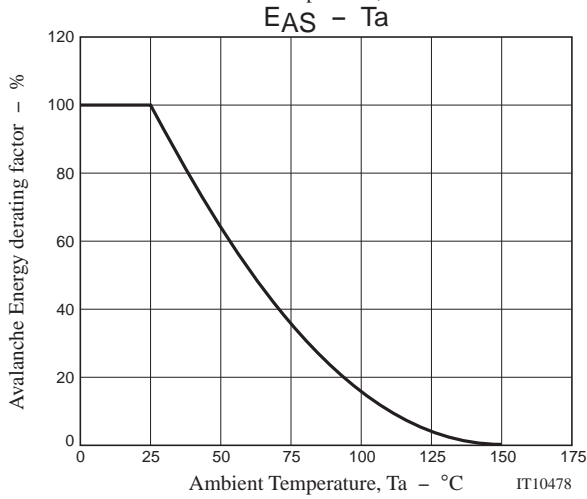
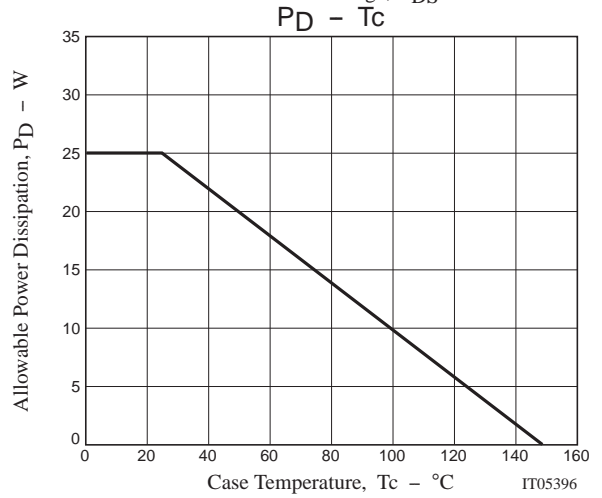
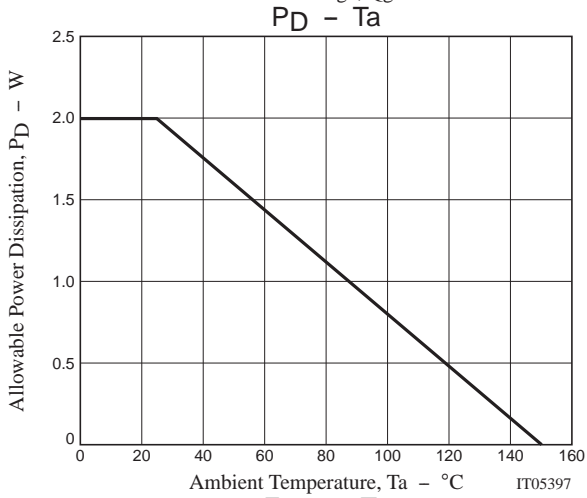
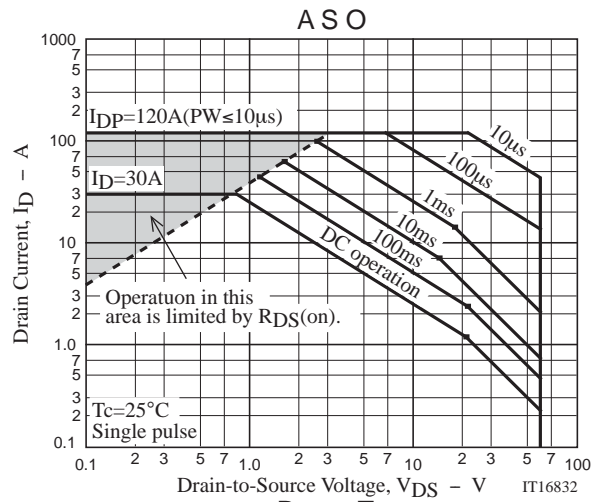
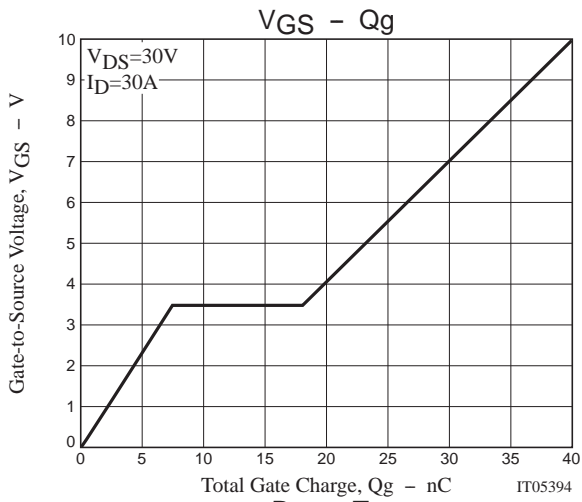
Fig.2 Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
2SK3703-1E	TO-220F-3SG	50pcs./magazine	Pb Free





Magazine Specification

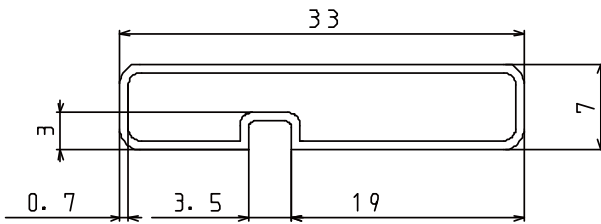
2SK3703-1E

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

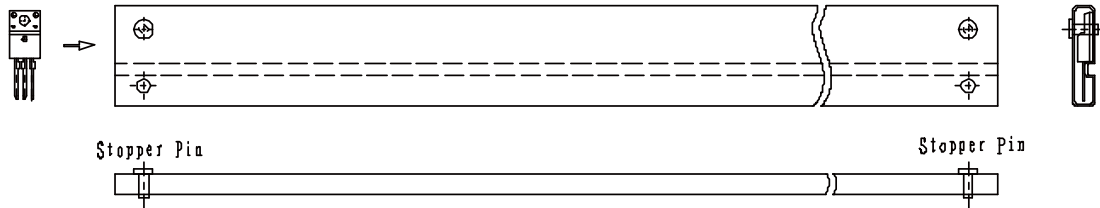
2. Magazine dimensions

(unit:mm)

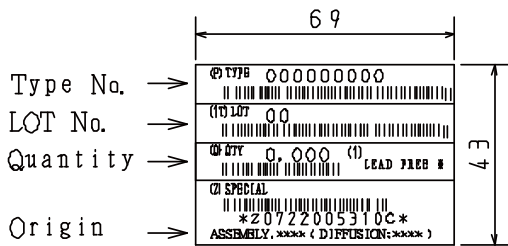


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

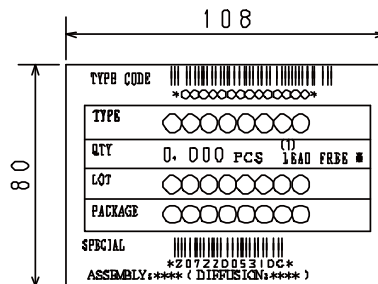


4. Inner box label (unit:mm)



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.



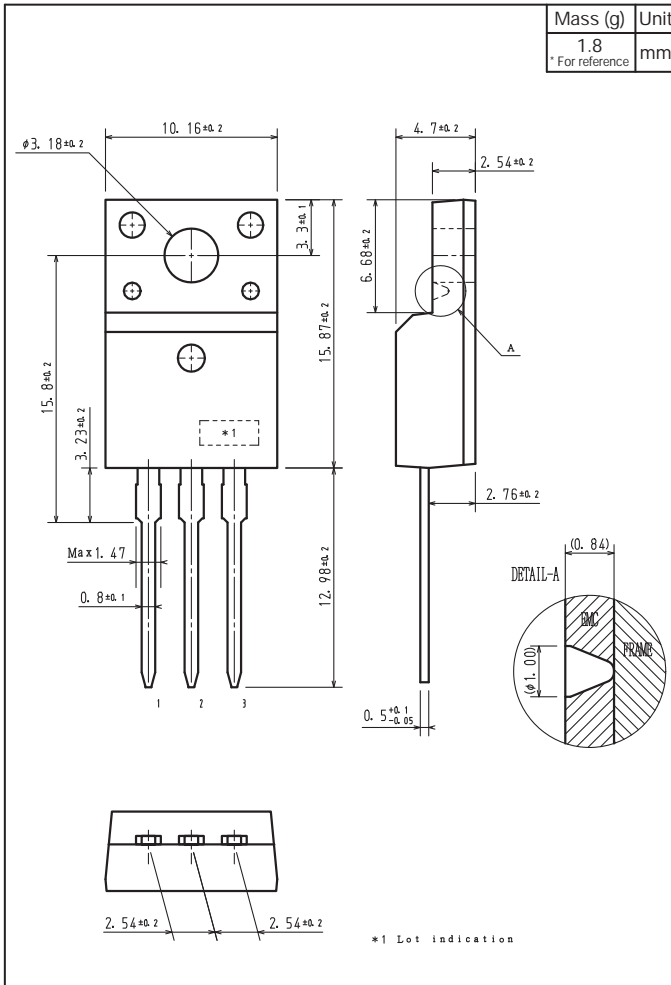
NOTE (1)

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

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

Outline Drawing

2SK3703-1E





Note on usage : Since the 2SK3703 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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