



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SK3707 — N-Channel Silicon MOSFET — General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)} = 45\text{m}\Omega$  (typ.)
- Input capacitance  $C_{iss} = 2150\text{pF}$  (typ.)
- 4V drive

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		100	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		20	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	80	A
Allowable Power Dissipation	$P_D$		2.0	W
		$T_c = 25^\circ\text{C}$	25	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		125	mJ
Avalanche Current *2	$I_{AV}$		20	A

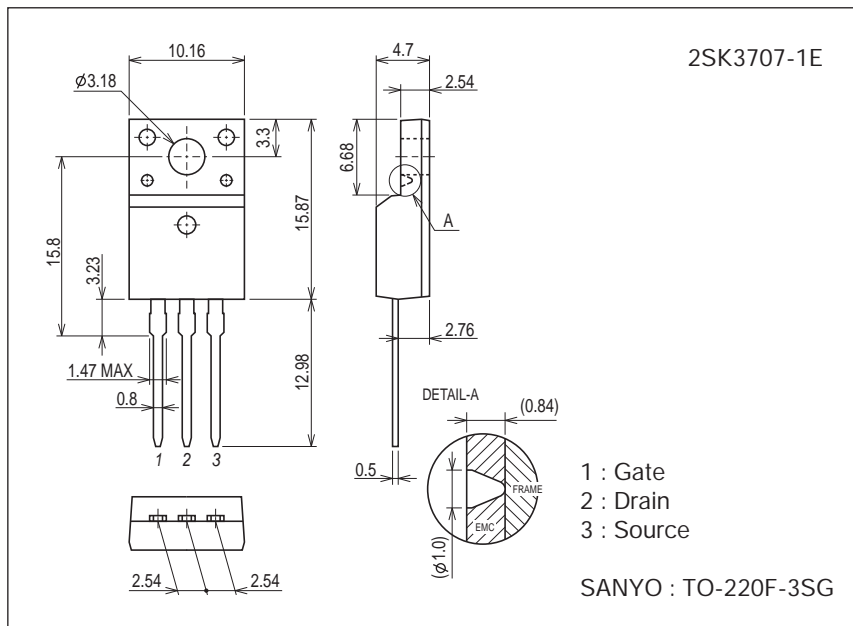
Note : \*1  $V_{DD} = 20\text{V}$ ,  $L = 500\mu\text{H}$ ,  $I_{AV} = 20\text{A}$  (Fig.1)

\*2  $L \leq 500\mu\text{H}$ , Single pulse

### Package Dimensions

unit : mm (typ)

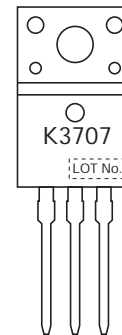
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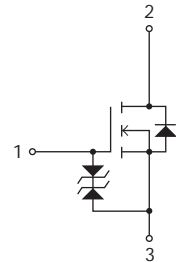
### Product & Package Information

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

### Marking



### Electrical Connection



# 2SK3707

## 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	100			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, 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> =10A	11	17		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =10A, V <sub>GS</sub> =10V		45	60	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =10A, V <sub>GS</sub> =4V		56	80	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, f=1MHz		2150		pF
Output Capacitance	C <sub>oss</sub>			160		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			110		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See Fig.2		19.5		ns
Rise Time	t <sub>r</sub>			30		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			185		ns
Fall Time	t <sub>f</sub>			60		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =20A		44		nC
Gate-to-Source Charge	Q <sub>gs</sub>			7.8		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>			9.8		nC
Diode Forward Voltage	V <sub>SD</sub>		I <sub>S</sub> =20A, V <sub>GS</sub> =0V		0.95	1.2

Fig.1 Avalanche Resistance Test Circuit

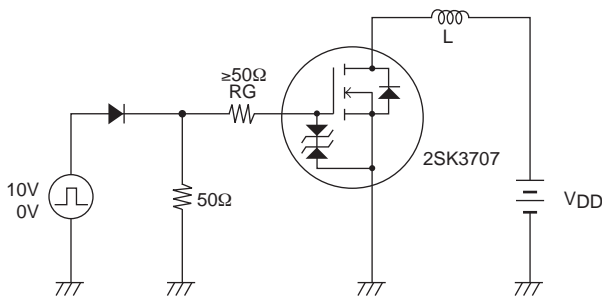
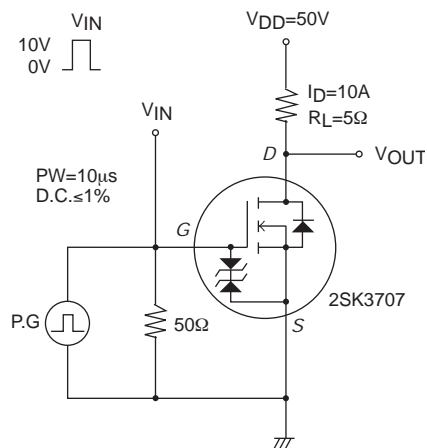
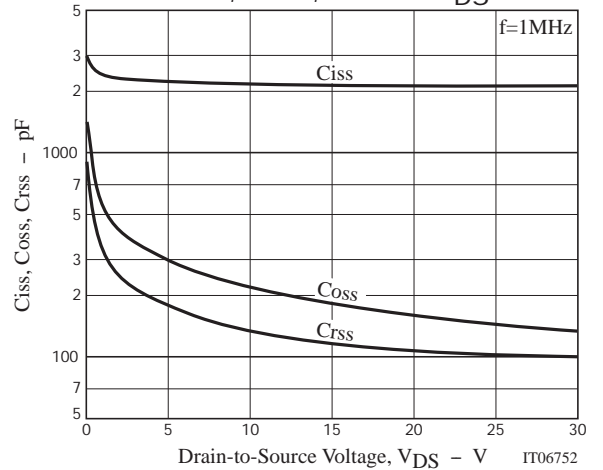
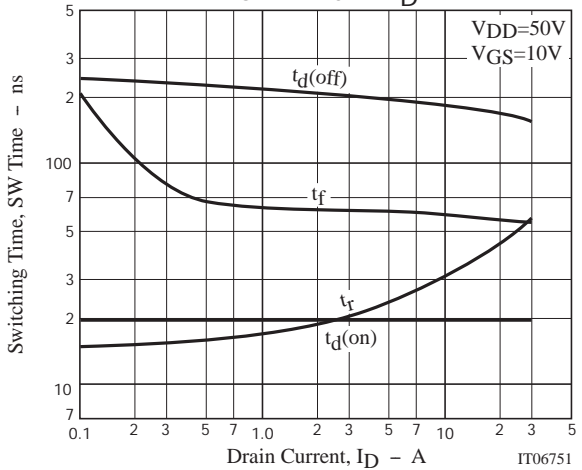
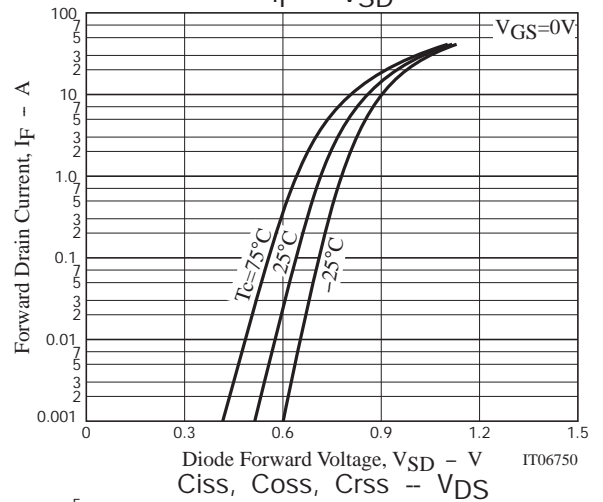
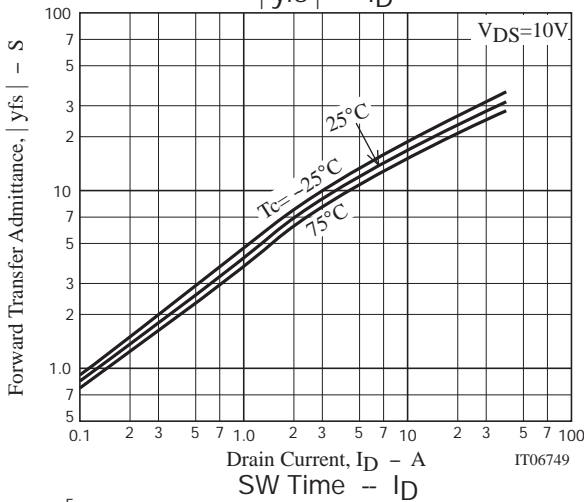
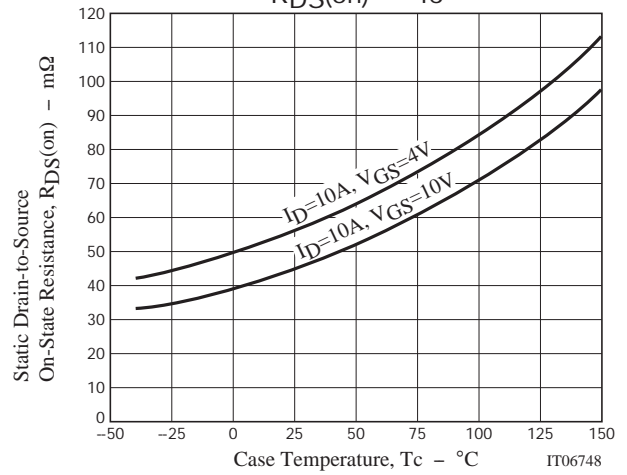
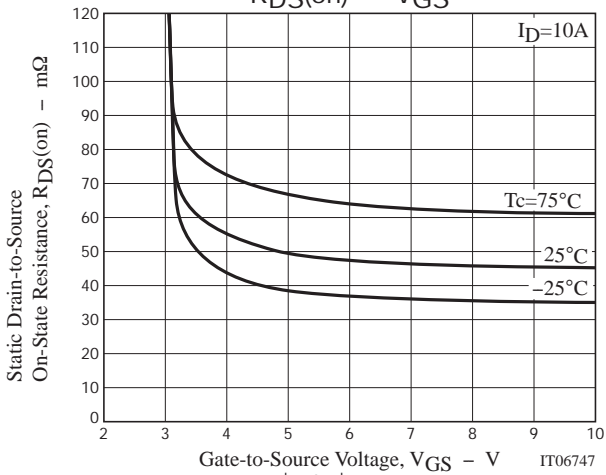
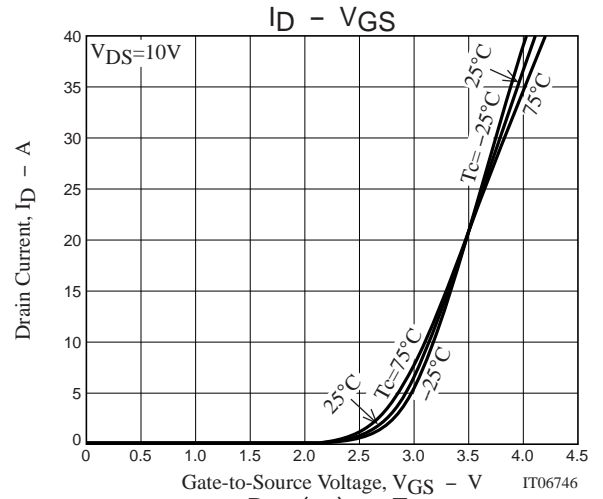
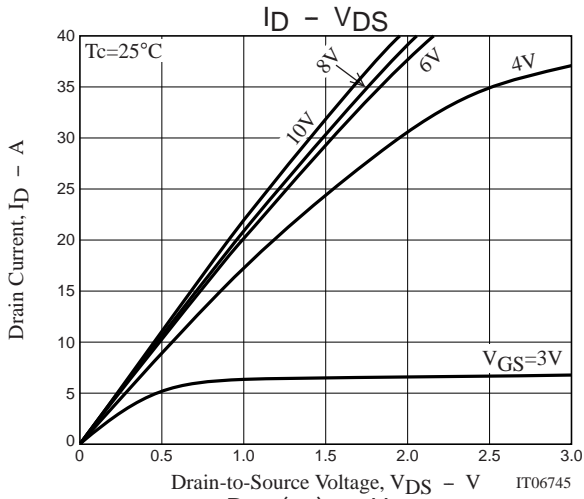


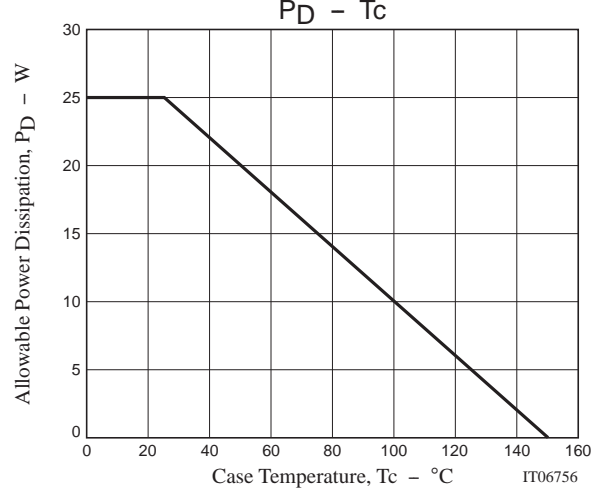
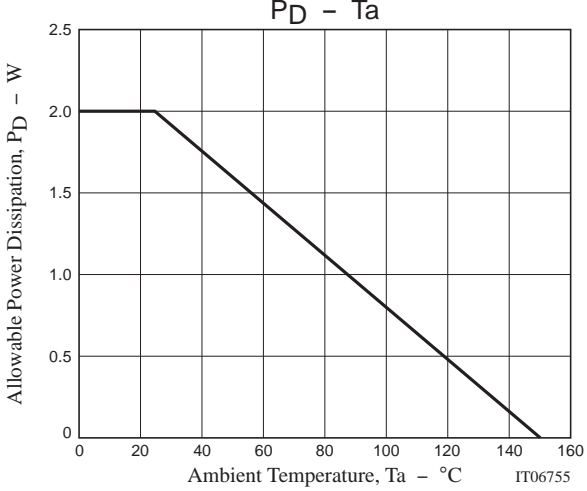
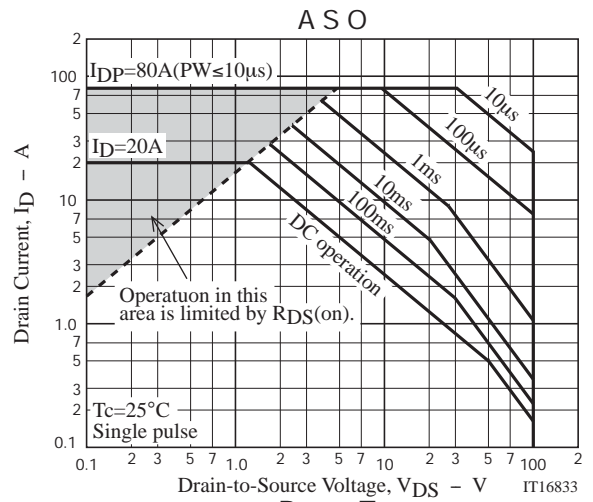
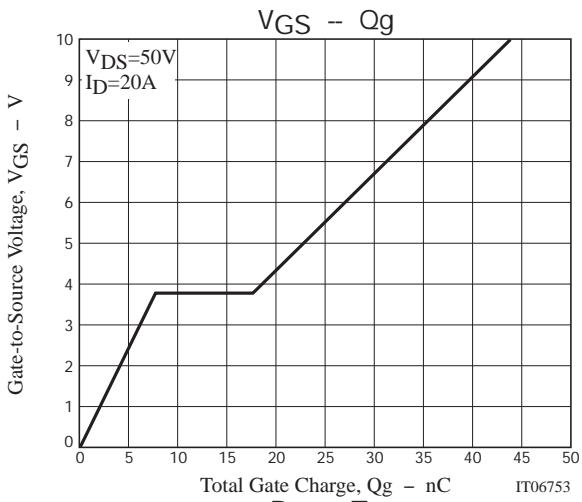
Fig.2 Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
2SK3707-1E	TO-220F-3SG	50pcs./magazine	Pb Free





Magazine Specification

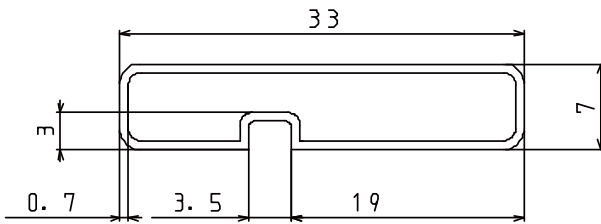
2SK3707-1E

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

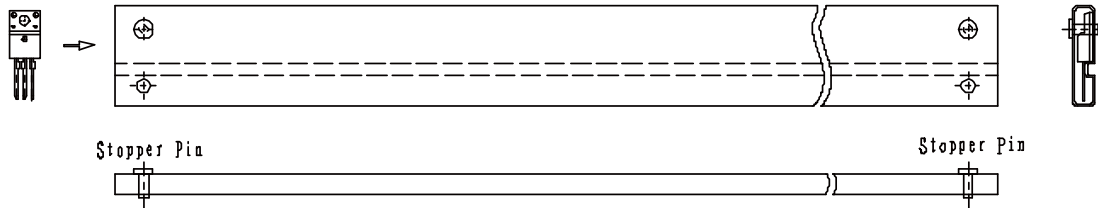
2. Magazine dimensions

(unit:mm)

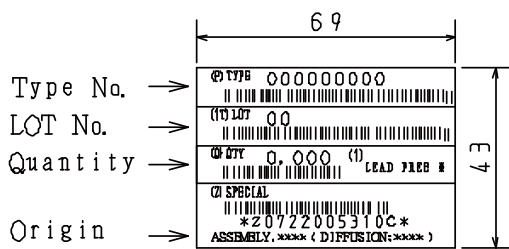


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

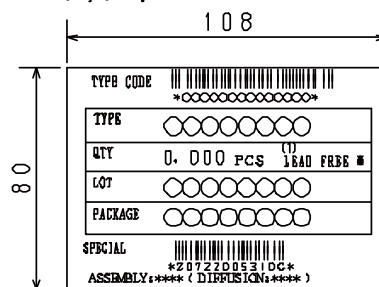


4. Inner box label (unit:mm)



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.



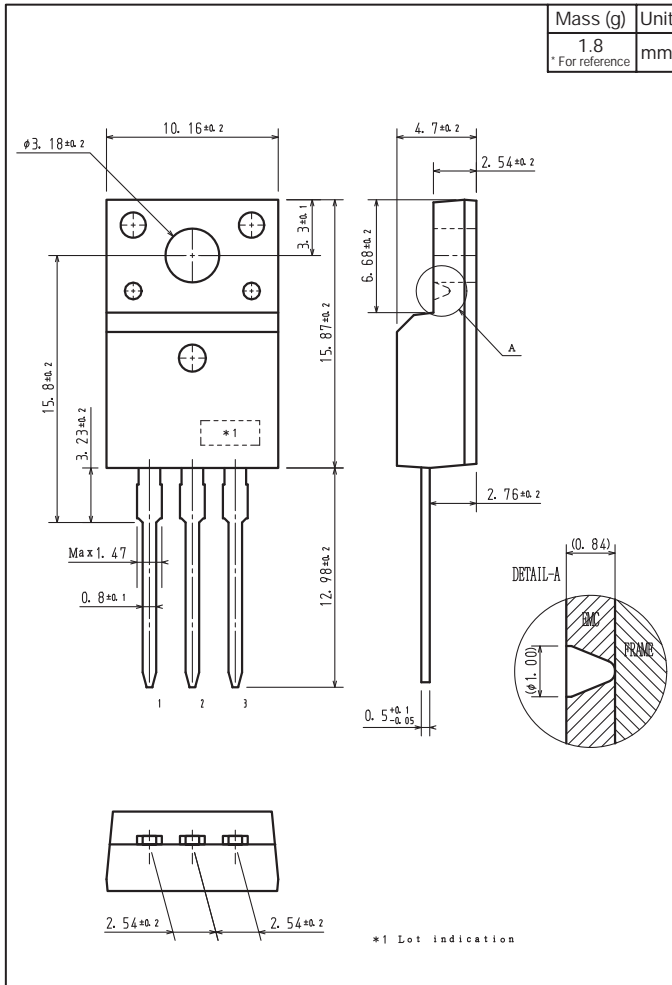
NOTE (1)

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

2SK3707-1E



Note on usage : Since the 2SK3707 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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