



2SK3707

N-Channel Power MOSFET 100V, 20A, 60mΩ, TO-220F-3SG

ON Semiconductor®

<http://onsemi.com>

Features

- ON-resistance $R_{DS(on)}1=45m\Omega$ (typ.)
- Input capacitance $C_{iss}=2150pF$ (typ.)
- 4V drive

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		100	V
Gate-to-Source Voltage	V_{GSS}		± 20	V
Drain Current (DC)	I_D		20	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	80	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}		125	mJ
Avalanche Current *2	I_{AV}		20	A

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

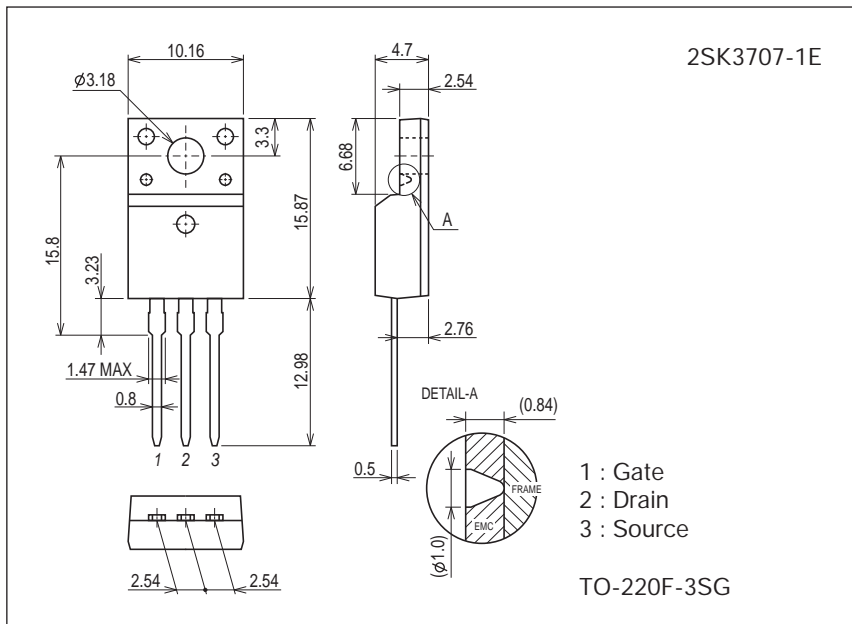
*2 $L \leq 500\mu H$, Single pulse

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)

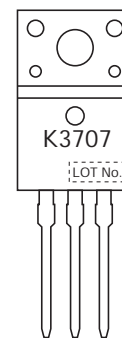
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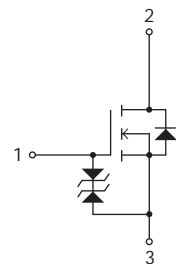
Product & Package Information

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

Marking



Electrical Connection



Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	100			V
Zero-Gate Voltage Drain Current	IDSS	VDS=100V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=10A	11	17		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=10A, VGS=10V		45	60	mΩ
	RDS(on)2	ID=10A, VGS=4V		56	80	mΩ
Input Capacitance	Ciss	VDS=20V, f=1MHz		2150		pF
Output Capacitance	Coss			160		pF
Reverse Transfer Capacitance	Crss			110		pF
Turn-ON Delay Time	td(on)		See Fig.2		19.5	
Rise Time	tr			30		ns
Turn-OFF Delay Time	td(off)			185		ns
Fall Time	tf			60		ns
Total Gate Charge	Qg	VDS=50V, VGS=10V, ID=20A			44	
Gate-to-Source Charge	Qgs			7.8		nC
Gate-to-Drain "Miller" Charge	Qgd			9.8		nC
Diode Forward Voltage	VSD		IS=20A, VGS=0V		0.95	1.2

Fig.1 Avalanche Resistance Test Circuit

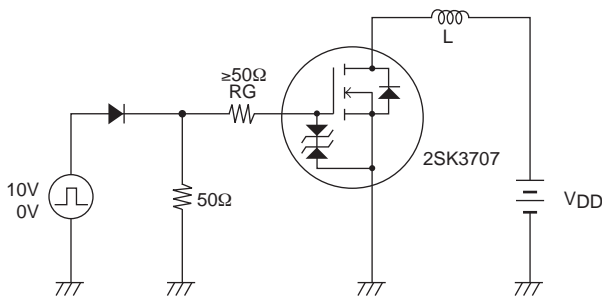
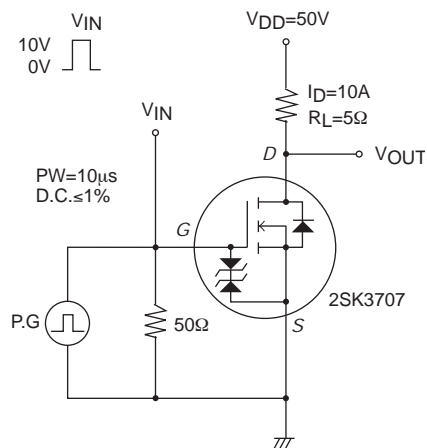
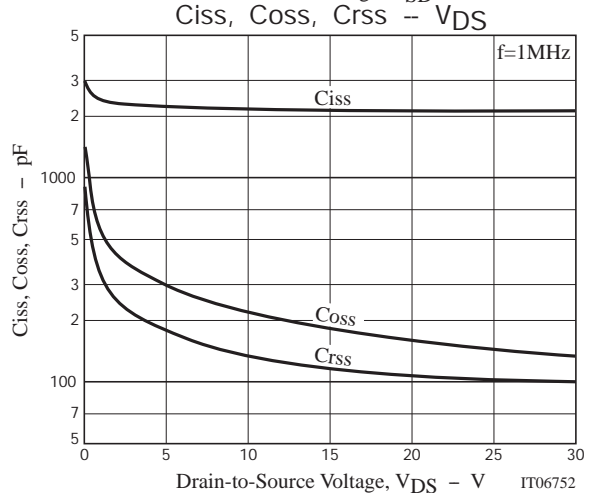
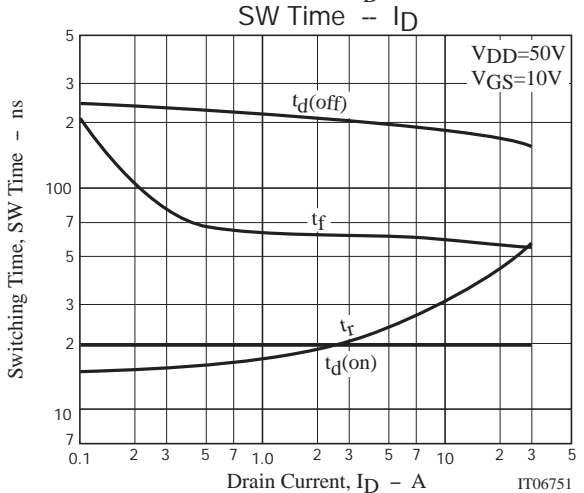
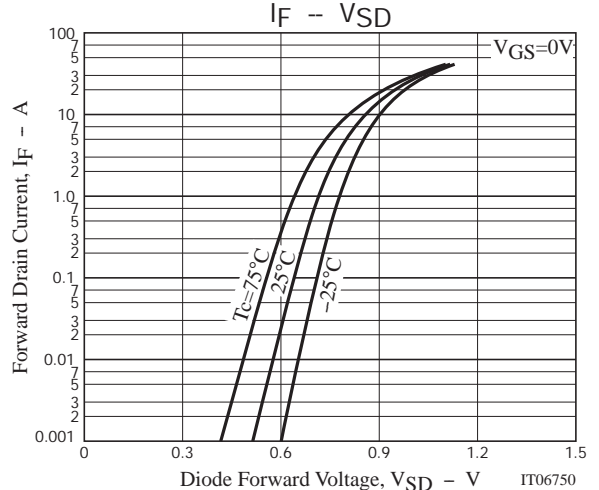
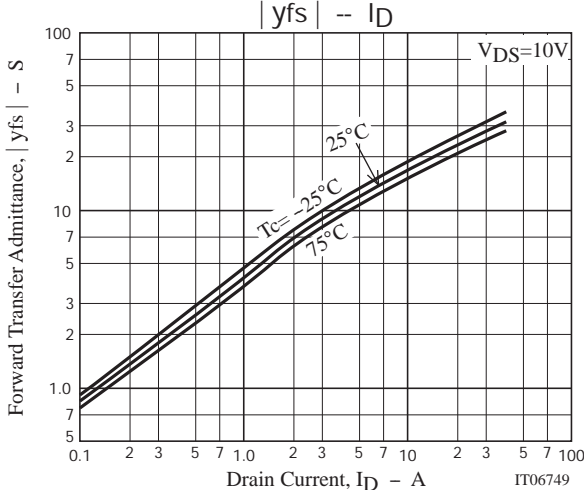
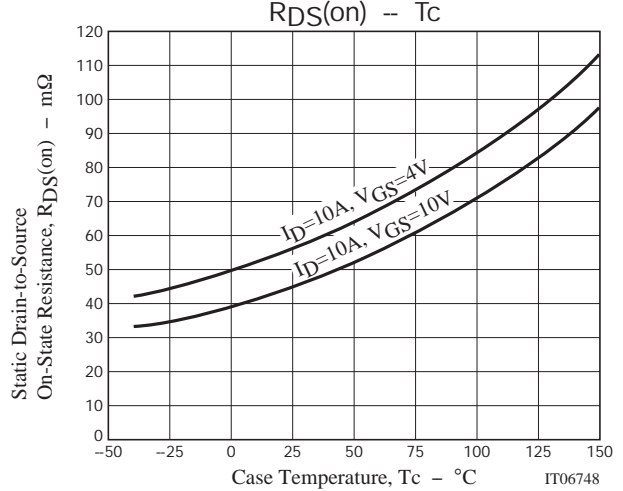
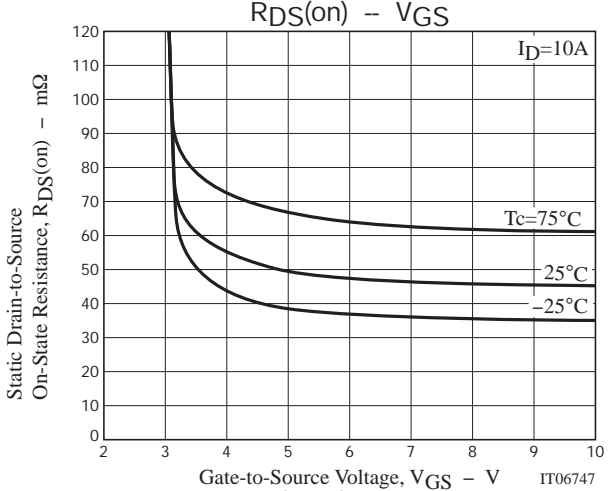
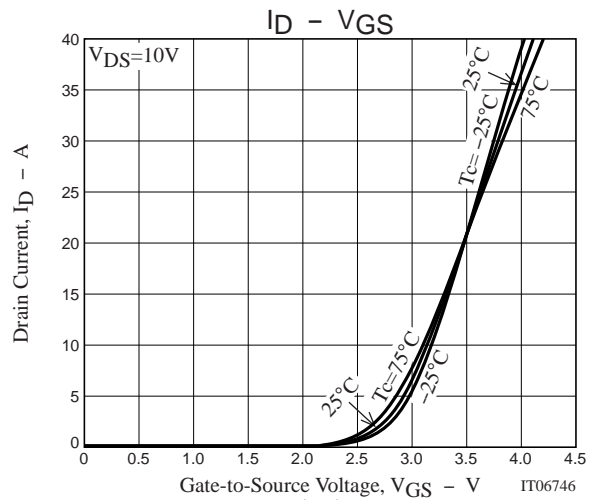
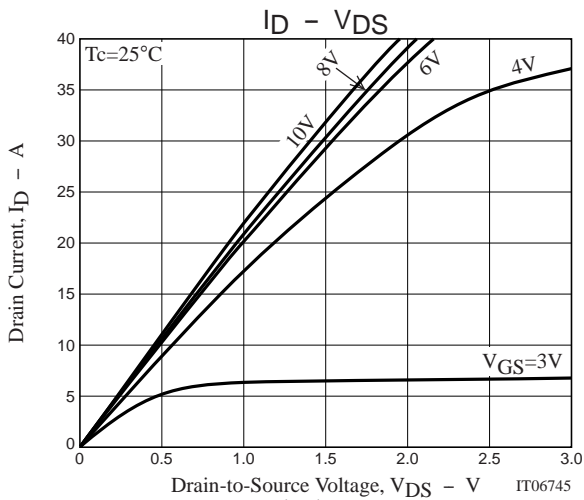


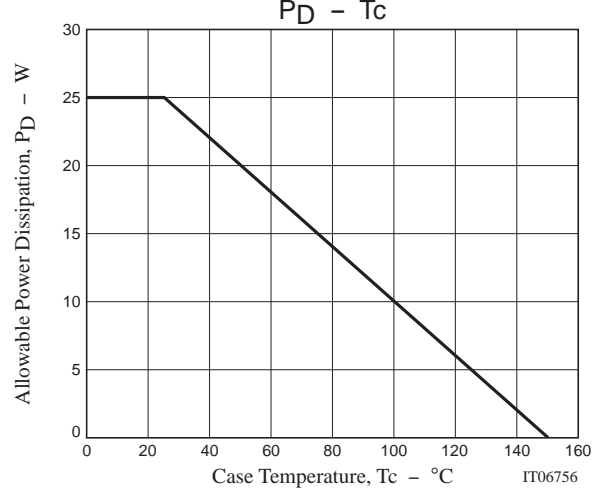
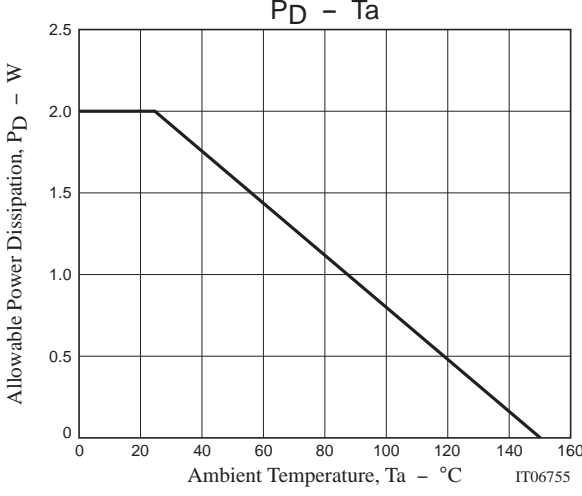
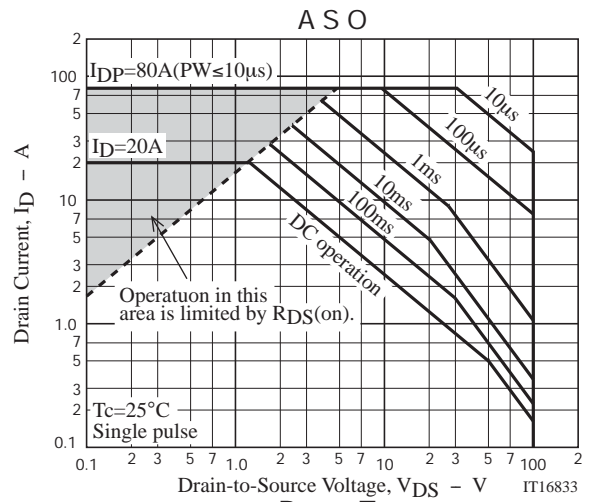
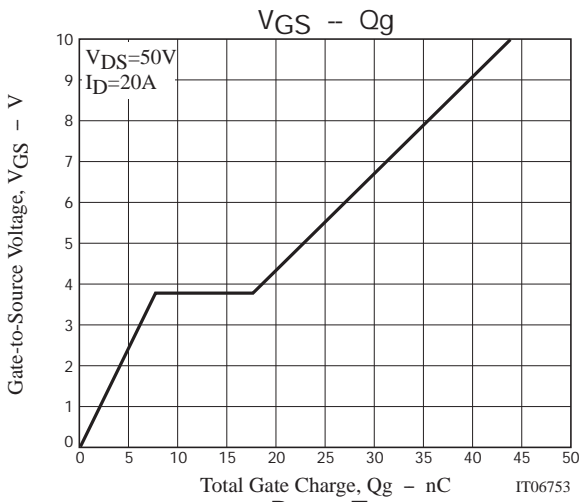
Fig.2 Switching Time Test Circuit



Ordering Information

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





Magazine Specification

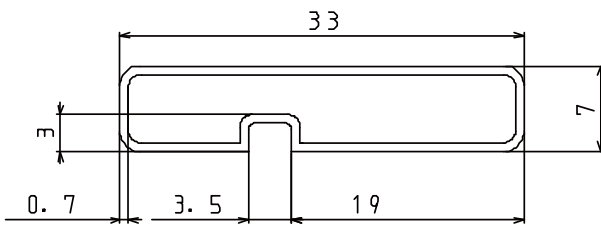
2SK3707-1E

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

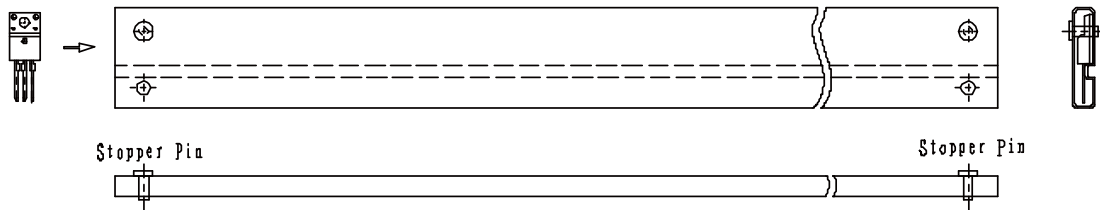
2. Magazine dimensions

(unit:mm)

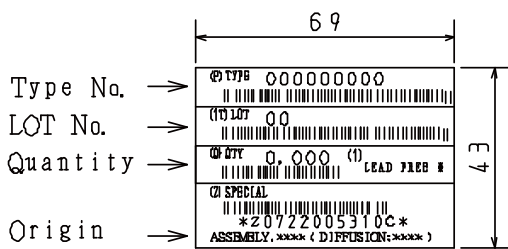


Tolerance=±0.3mm
 Thickness=0.7±0.2mm
 Length =532.5±2mm
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

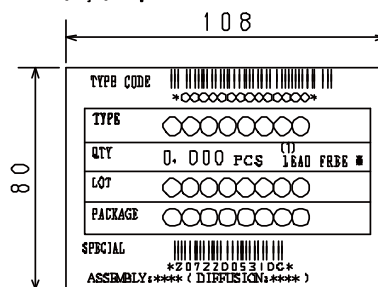


4. Inner box label (unit:mm)



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.



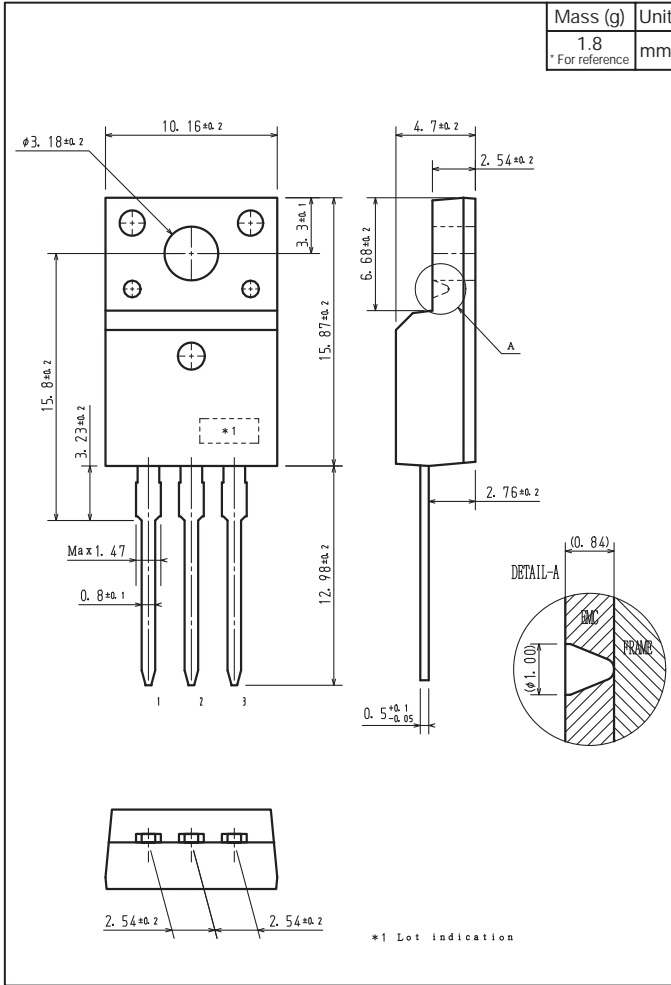
NOTE (1)

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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