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2SK3707

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

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

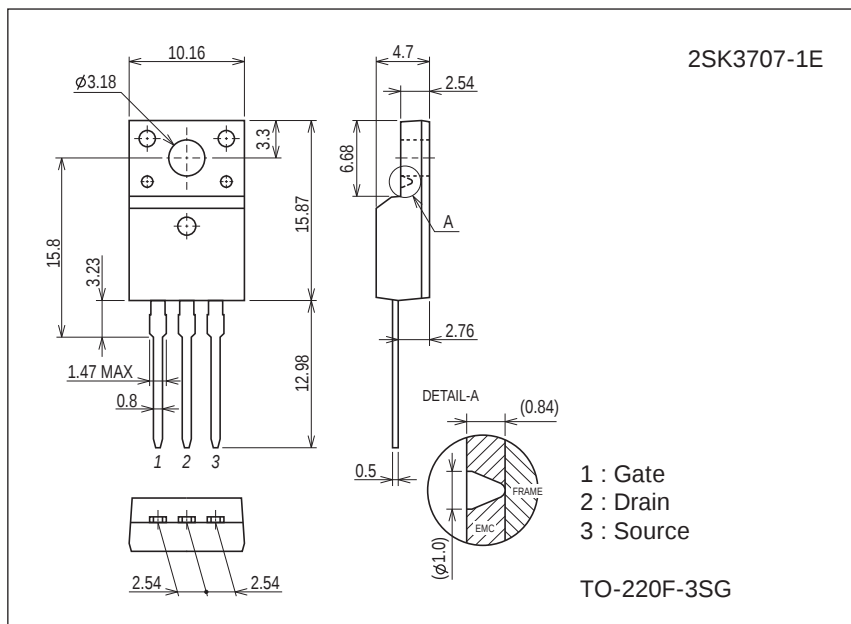
Note : *1 $V_{DD}=20V$, $L=500\mu H$, $I_{AV}=20A$ (Fig.1)*2 $L \leq 500\mu H$, Single pulse

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)

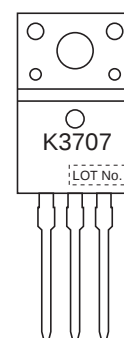
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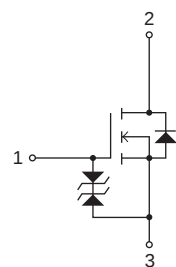
Product & Package Information

- 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	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0V$	100			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=10A$	11	17		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=10A, V_{GS}=10V$		45	60	$m\Omega$
	$R_{DS(on)2}$	$I_D=10A, V_{GS}=4V$		56	80	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20V, f=1MHz$		2150		pF
Output Capacitance	C_{oss}			160		pF
Reverse Transfer Capacitance	C_{rss}			110		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		19.5		ns
Rise Time	t_r			30		ns
Turn-OFF Delay Time	$t_{d(off)}$			185		ns
Fall Time	t_f			60		ns
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=20A$		44		nC
Gate-to-Source Charge	Q_{gs}			7.8		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			9.8		nC
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$		0.95	1.2	V

Fig.1 Avalanche Resistance Test Circuit

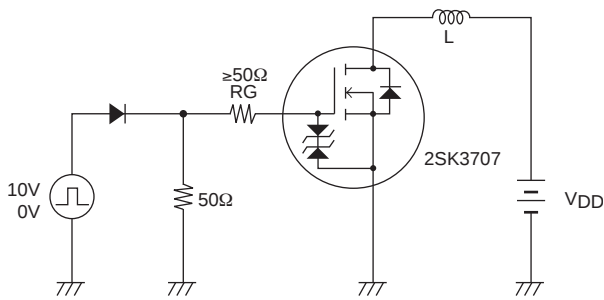
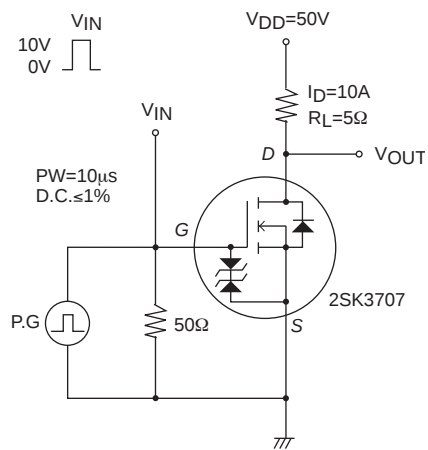
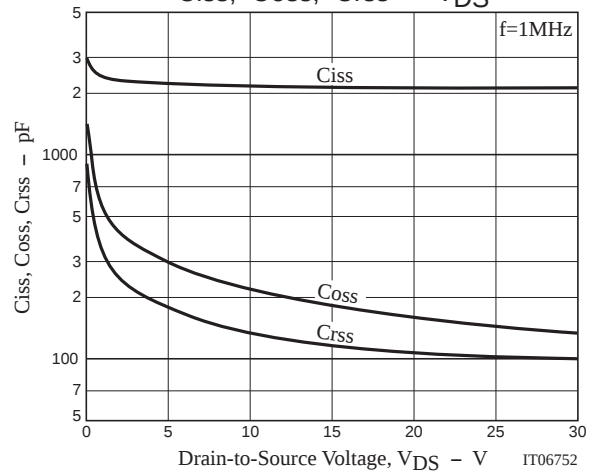
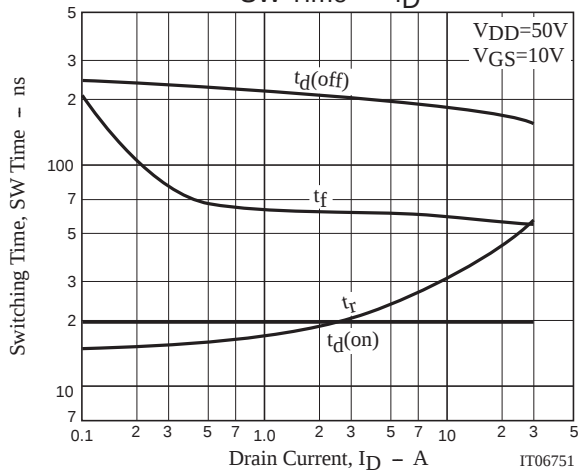
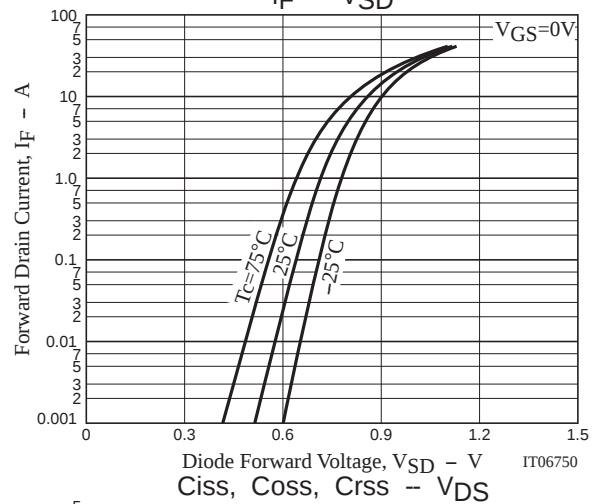
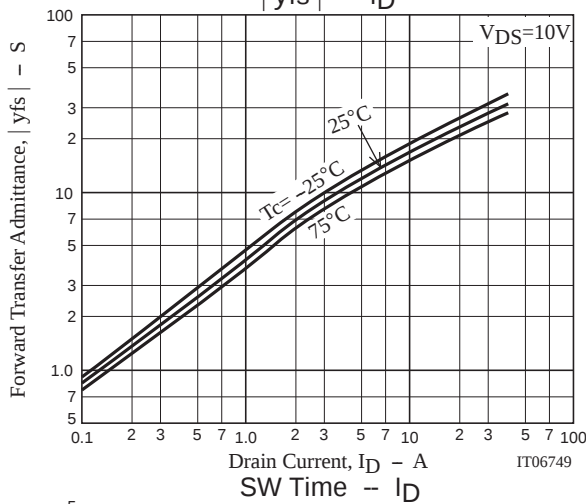
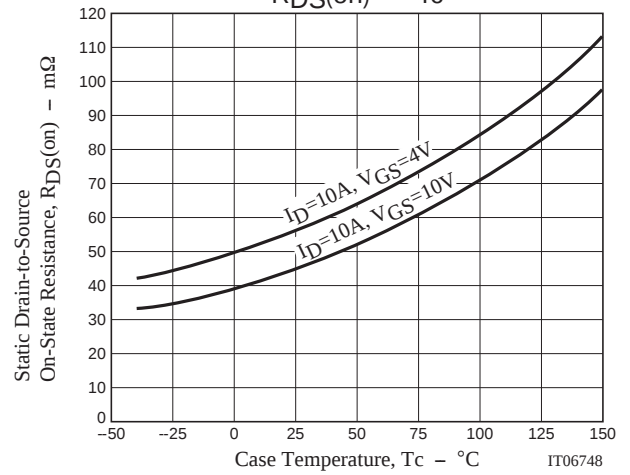
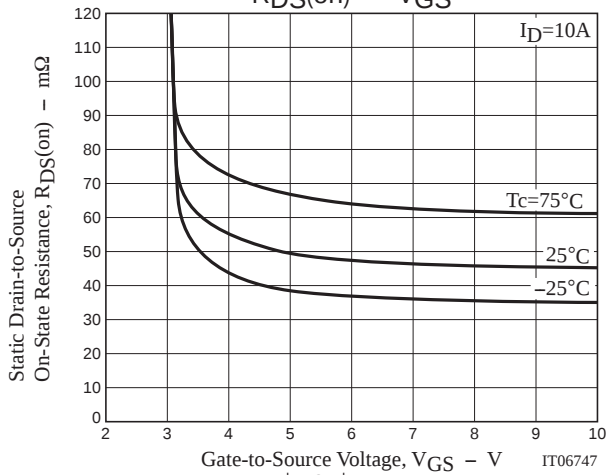
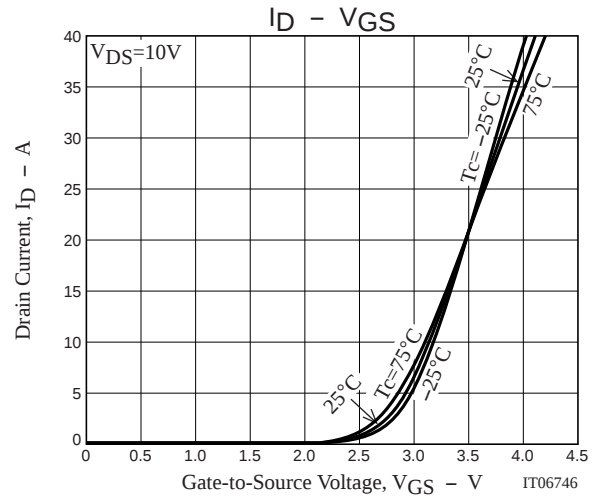
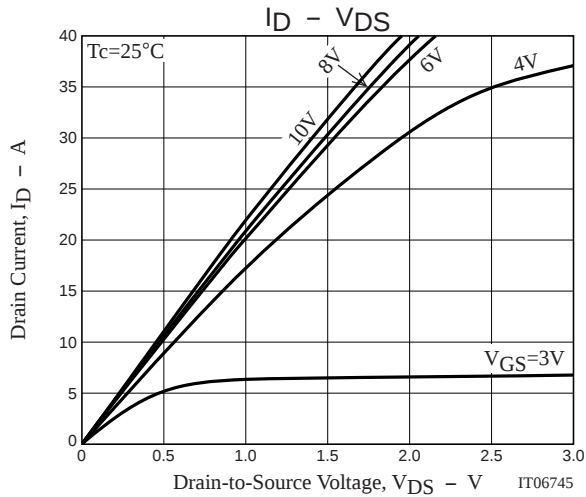


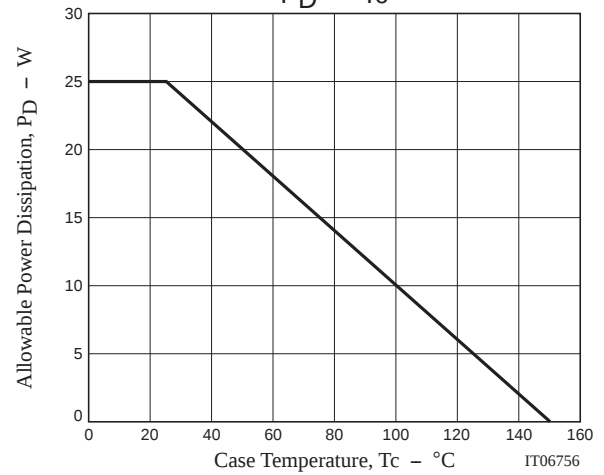
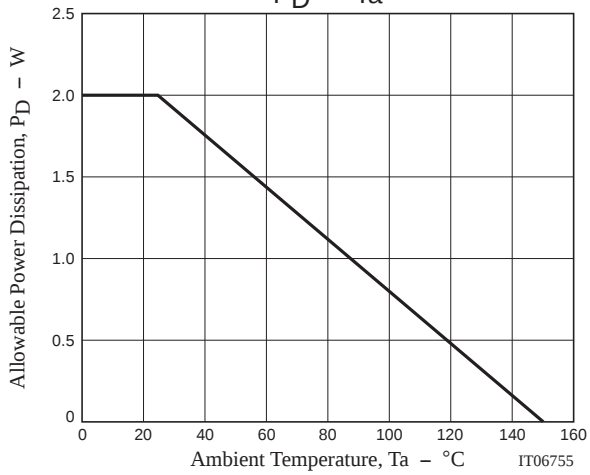
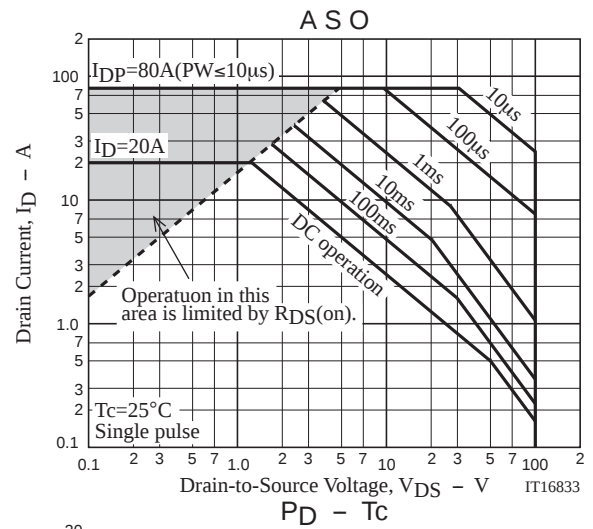
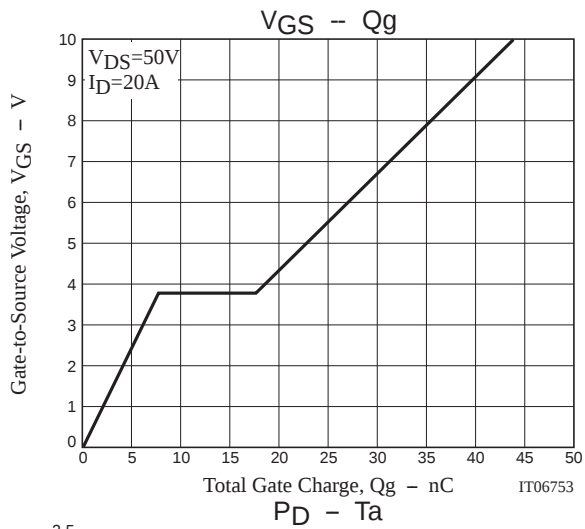
Fig.2 Switching Time Test Circuit



Ordering Information

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





Magazine Specification

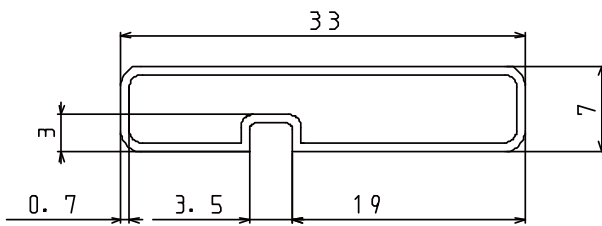
2SK3707-1E

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

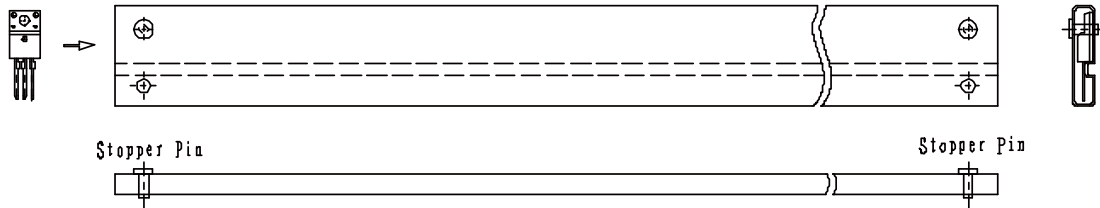
2. Magazine dimensions

(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)

Type No.	→	TYPE 0000000000
LOT No.	→	LOT 00
Quantity	→	QTY 0,000 (1) LEAD FREE *
Origin	→	SPECIAL *20722005310C* ASSEMBLY:***** (DIFFUSION:*****)

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.

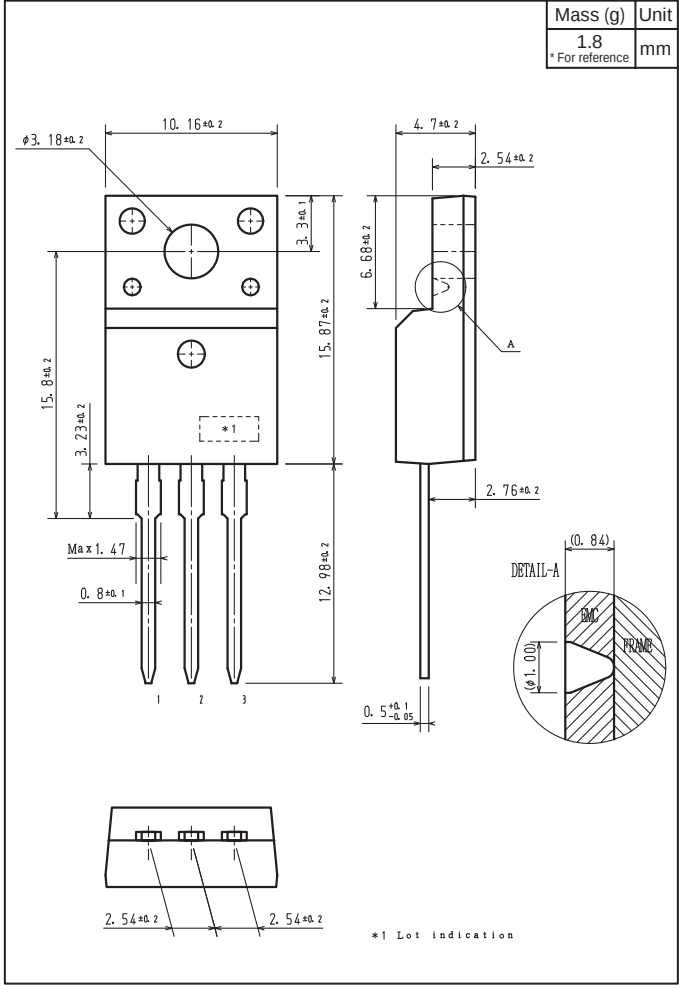
TYPE CODE	TYPE 0000000000
QTY	QTY 0,000 PCS (1) LEAD FREE *
LOT	LOT 00
PACKAGE	PACKAGE 00000000
SPECIAL	*20722005310C* ASSEMBLY:***** (DIFFUSION:*****)

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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