



# 2SK4087LS

## N-Channel Power MOSFET 600V, 14A, 610mΩ, TO-220F-3FS

ON Semiconductor®

<http://onsemi.com>

### Features

- ON-resistance  $R_{DS(on)}=0.47\Omega$  (typ.)
- 10V drive
- Input capacitance  $C_{iss}=1200pF$  (typ.)

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		600	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 30$	V
Drain Current (DC)	$I_{DC}^*1$	Limited only by maximum temperature $T_{ch}=150^\circ C$	14	A
	$I_{Dpack}^*2$	$T_c=25^\circ C$ (Our ideal heat dissipation condition)*3	9.2	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	52	A
Allowable Power Dissipation	PD		2.0	W
		$T_c=25^\circ C$ (Our ideal heat dissipation condition)*3	40	W
Channel Temperature	$T_{ch}$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$
Avalanche Energy (Single Pulse) *4	EAS		106	mJ
Avalanche Current *5	$I_{AV}$		14	A

\*1 Shows chip capability.

\*2 Package limited.

\*3 Our condition is radiation from backside.

The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

\*4  $V_{DD}=50V$ ,  $L=1mH$ ,  $I_{AV}=14A$  (Fig.1)

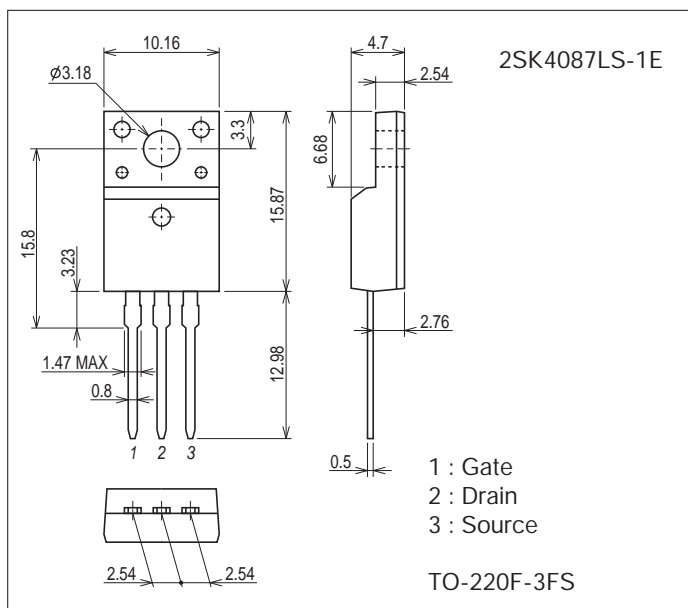
\*5  $L \leq 1mH$ , Single pulse

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)

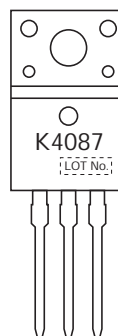
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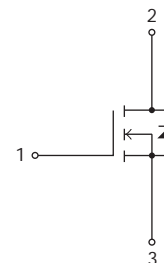
### Product & Package Information

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

### Marking



### Electrical Connection



# 2SK4087LS

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=10mA, VGS=0V	600			V
Zero-Gate Voltage Drain Current	IDSS	VDS=480V, VGS=0V			100	μA
Gate-to-Source Leakage Current	IGSS	VGS=±30V, VDS=0V			±100	nA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	3		5	V
Forward Transfer Admittance	yfs	VDS=10V, ID=7A	4	8		S
Static Drain-to-Source On-State Resistance	RDS(on)	ID=7A, VGS=10V		0.47	0.61	Ω
Input Capacitance	Ciss	VDS=30V, f=1MHz		1200		pF
Output Capacitance	Coss			220		pF
Reverse Transfer Capacitance	Crss			50		pF
Turn-ON Delay Time	td(on)	See Fig.2		27		ns
Rise Time	tr			72		ns
Turn-OFF Delay Time	td(off)			144		ns
Fall Time	tf			48		ns
Total Gate Charge	Qg				46	
Gate-to-Source Charge	Qgs	VDS=200V, VGS=10V, ID=14A		8.6		nC
Gate-to-Drain "Miller" Charge	Qgd			26.4		nC
Diode Forward Voltage	VSD	IS=14A, VGS=0V		0.95	1.3	V

Fig.1 Unclamped Inductive Switching Test Circuit

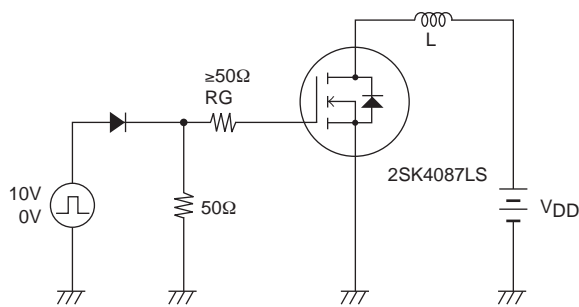
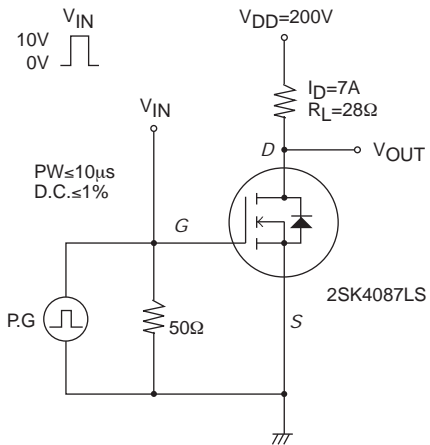
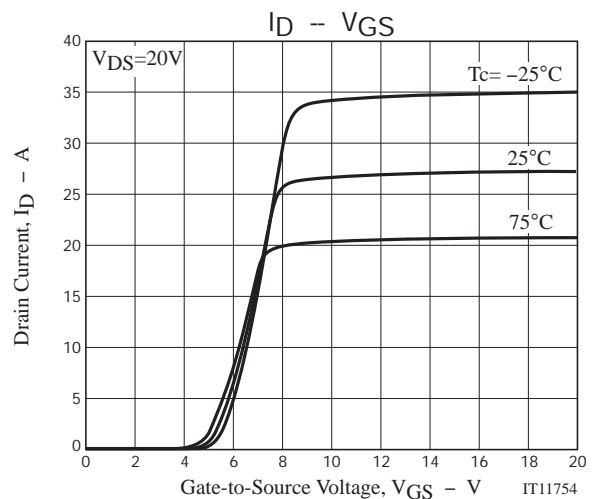
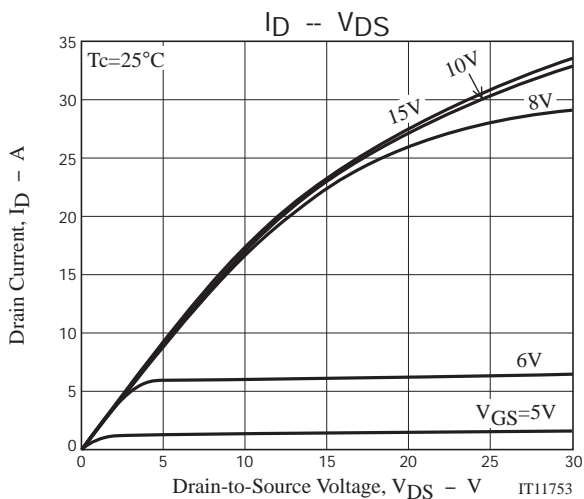


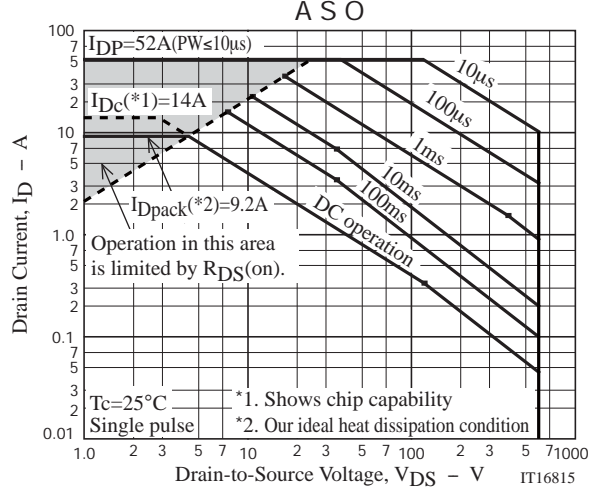
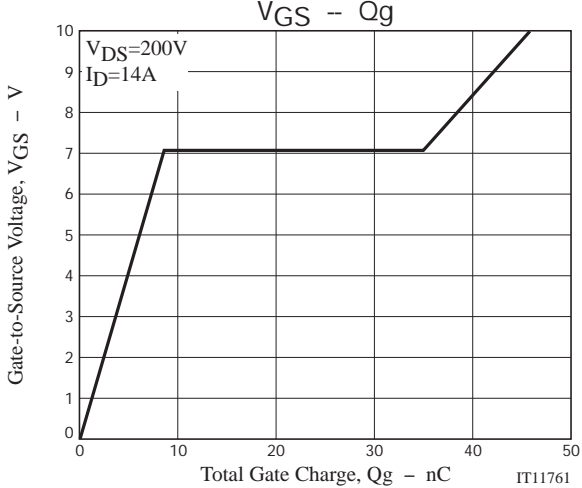
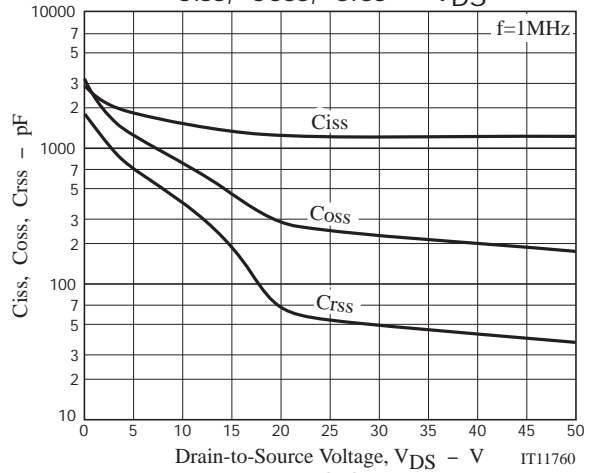
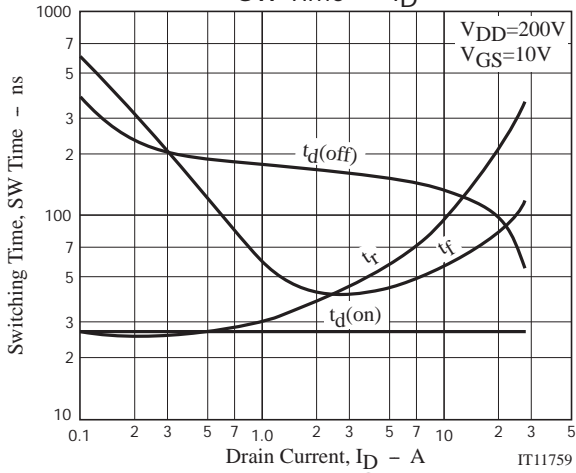
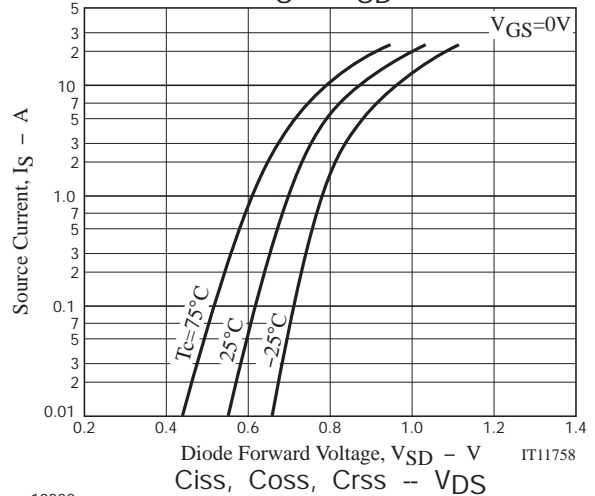
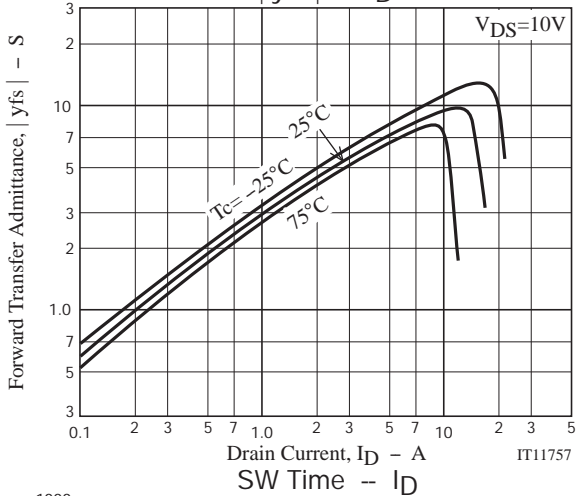
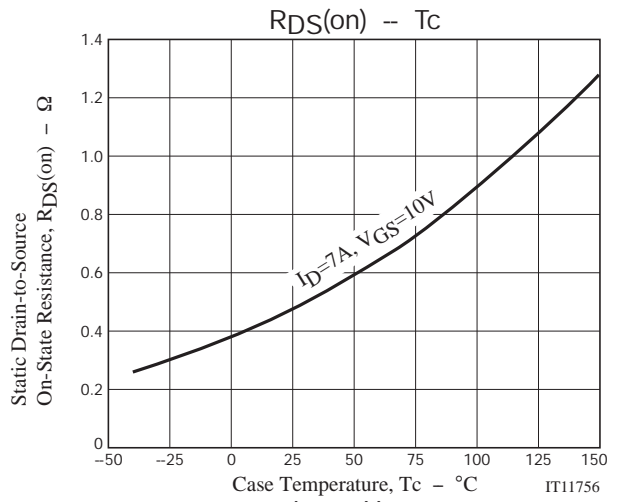
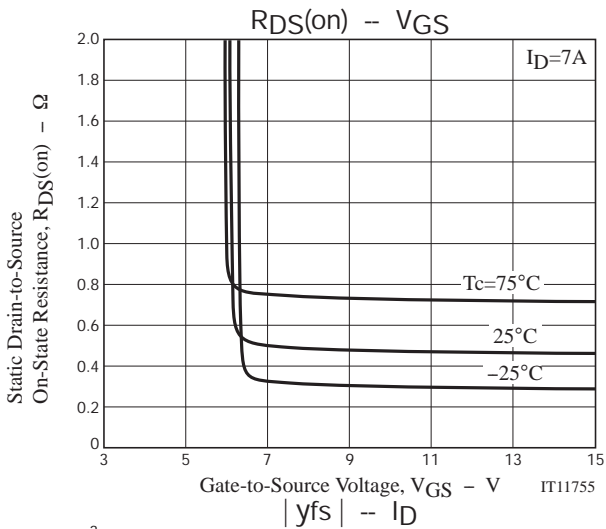
Fig.2 Switching Time Test Circuit



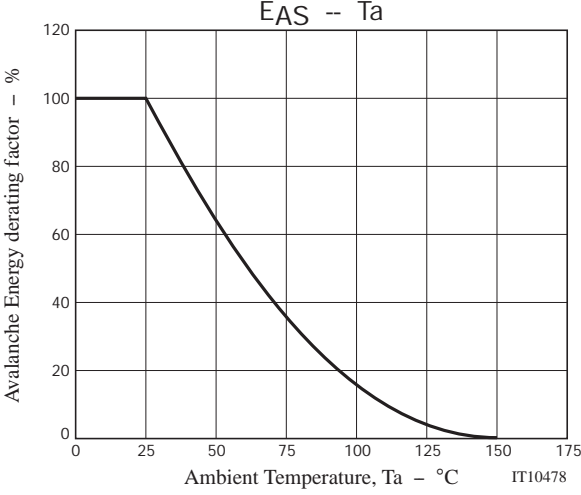
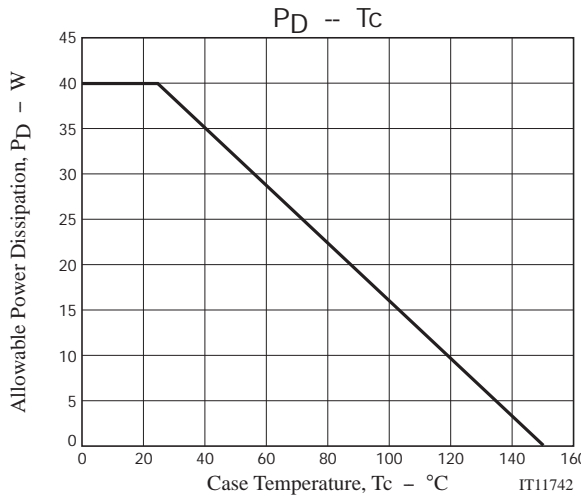
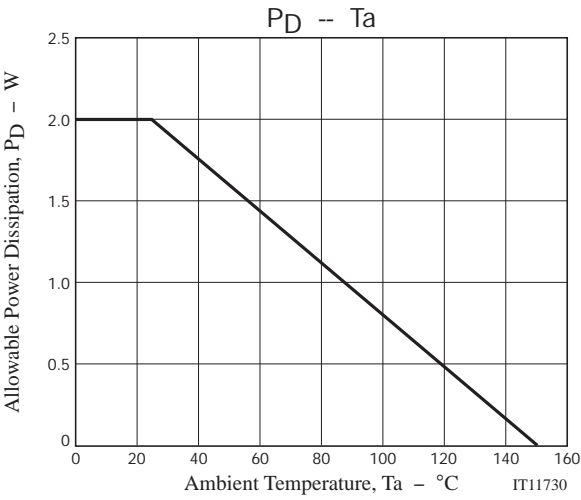
## Ordering Information

Device	Package	Shipping	memo
2SK4087LS-1E	TO-220F-3FS	50pcs./magazine	Pb Free





2SK4087LS



# 2SK4087LS

## Magazine Specification

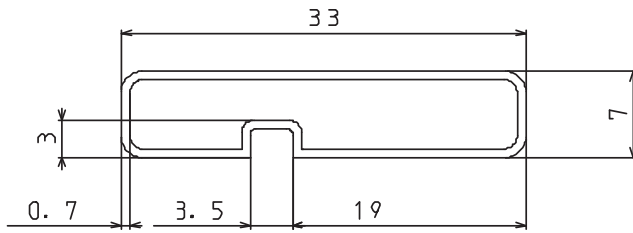
2SK4087LS-1E

### 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-3FS	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

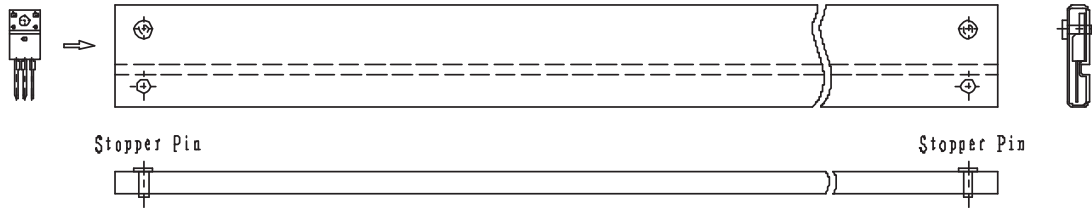
### 2. Magazine dimensions

(unit:mm)

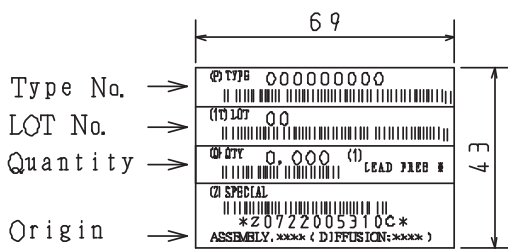


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

### 3. Storage method to magazine

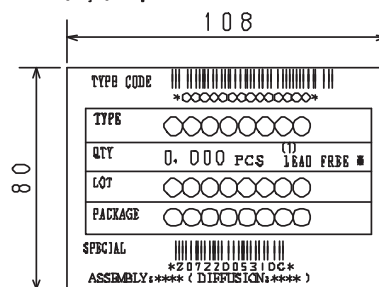


### 4. Inner box label (unit:mm)



### 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.

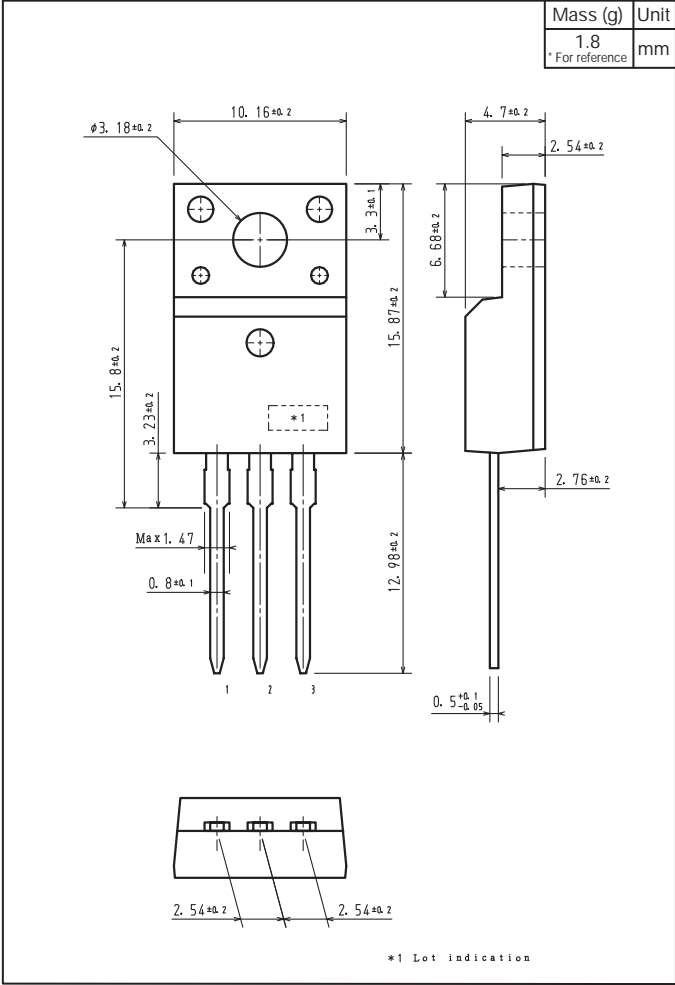


**NOTE (1)**

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  
2SK4087LS-1E





Note on usage : Since the 2SK4087LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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