



# 2SK3745LS

## N-Channel Power MOSFET 1500V, 2A, 13Ω, TO-220F-3FS

ON Semiconductor®

<http://onsemi.com>

### Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching
- High reliability (Adoption of HVP process)
- Micaless package facilitating mounting
- Avalanche resistance guarantee

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		1500	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	V
Drain Current (DC)	I <sub>D</sub> *		2	A
Drain Current (Pulse)	I <sub>DP</sub>		4	A
Allowable Power Dissipation	P <sub>D</sub>	T <sub>c</sub> =25°C	2.0	W
			35	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E <sub>AS</sub>		41	mJ
Avalanche Current *2	I <sub>AV</sub>		2	A

\*Shows chip capability

\*1 V<sub>DD</sub>=50V, L=20mH, I<sub>AV</sub>=2A (Fig.1)

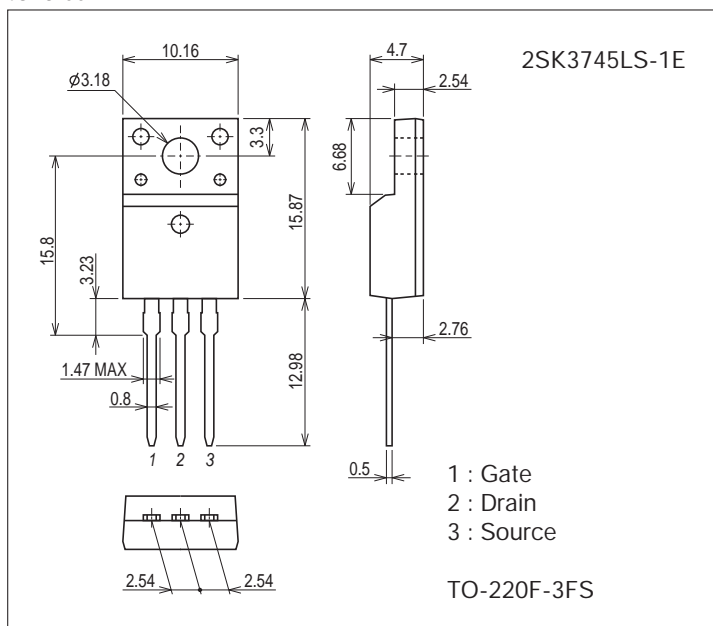
\*2 L≤20mH, single pulse

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)

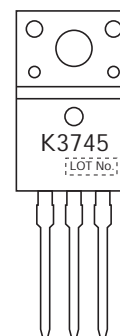
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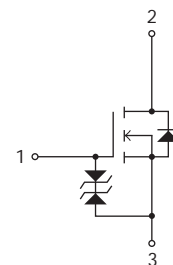
### Product & Package Information

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

### Marking



### Electrical Connection

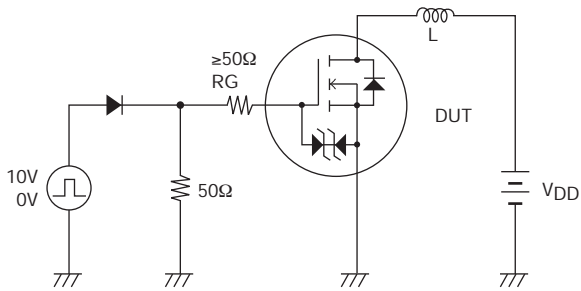


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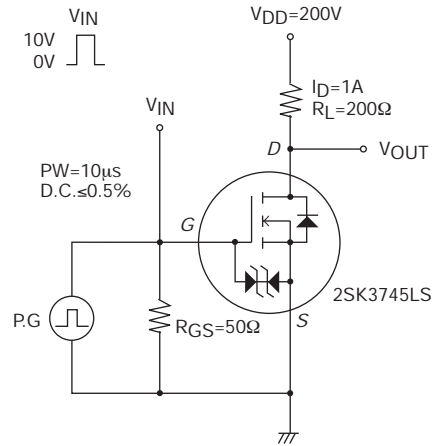
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0V$	1500			V	
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=1200V, V_{GS}=0V$			100	$\mu A$	
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=16V, V_{DS}=0V$			$\pm 10$	$\mu A$	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	2.5		3.5	V	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=20V, I_D=1A$	0.7	1.4		S	
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=1A, V_{GS}=10V$		10	13	$\Omega$	
Input Capacitance	$C_{iss}$	$V_{DS}=30V, f=1MHz$		380		pF	
Output Capacitance	$C_{oss}$				70		pF
Reverse Transfer Capacitance	$C_{rss}$				40		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		12		ns	
Rise Time	$t_r$			37		ns	
Turn-OFF Delay Time	$t_{d(off)}$			152		ns	
Fall Time	$t_f$			59		ns	
Total Gate Charge	$Q_g$	$V_{DS}=200V, V_{GS}=10V, I_D=2A$		37.5		nC	
Gate-to-Source Charge	$Q_{gs}$			2.7		nC	
Gate-to-Drain "Miller" Charge	$Q_{gd}$			20		nC	
Diode Forward Voltage	$V_{SD}$	$I_S=2A, V_{GS}=0V$		0.88	1.2	V	

**Fig.1 Avalanche Resistance Test Circuit**

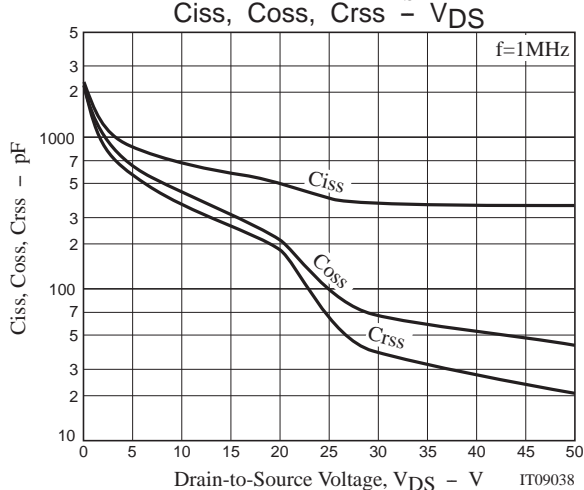
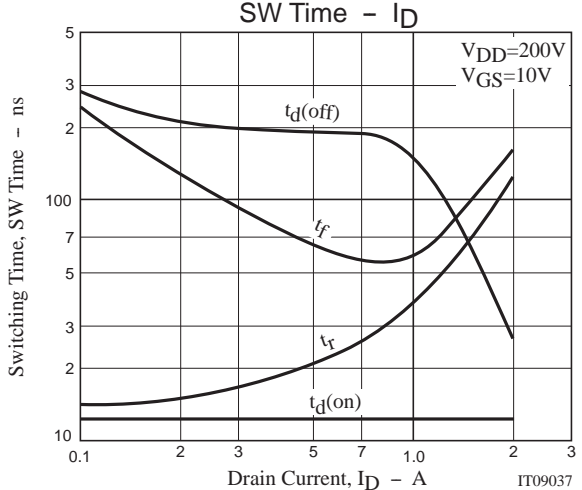
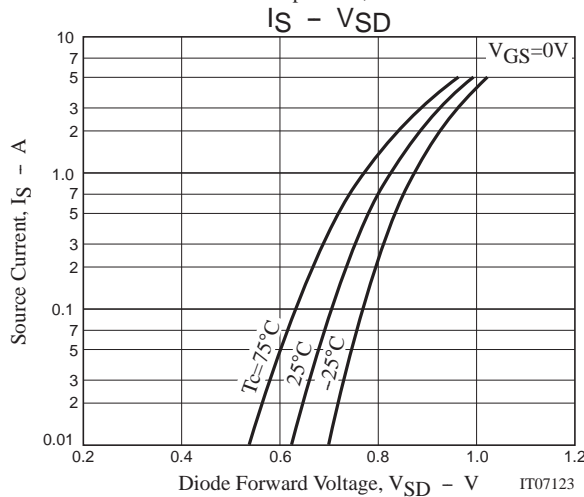
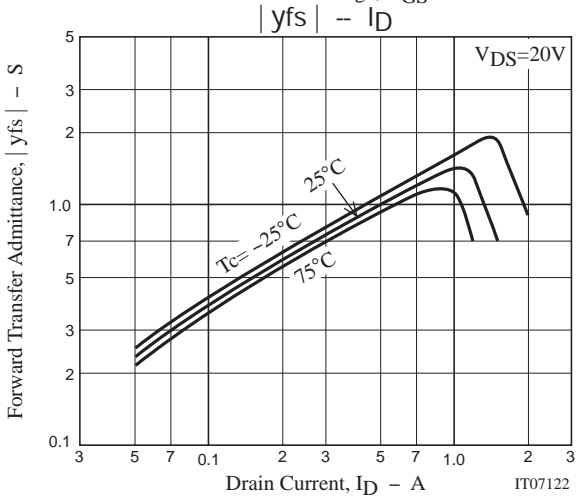
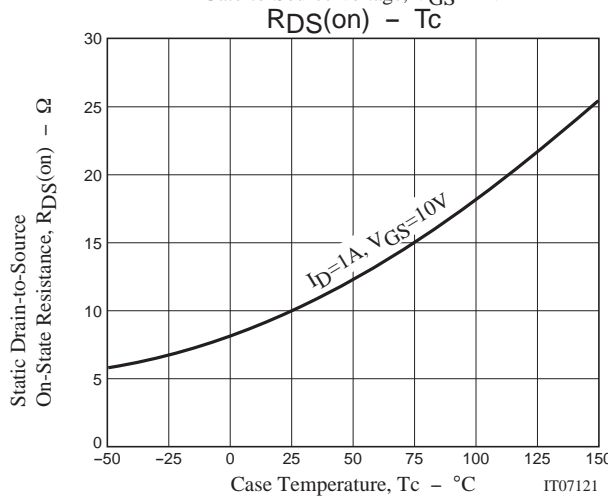
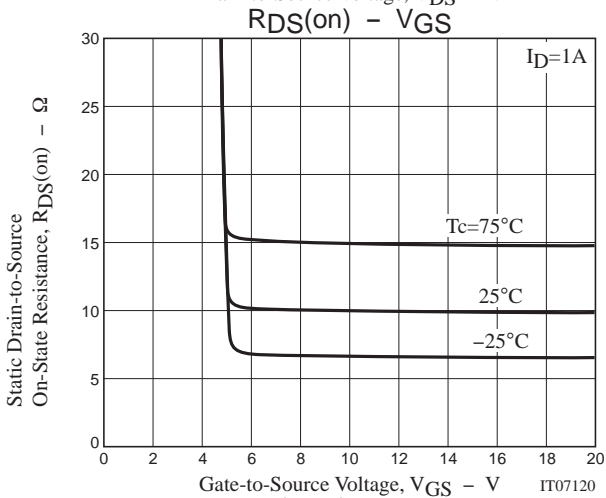
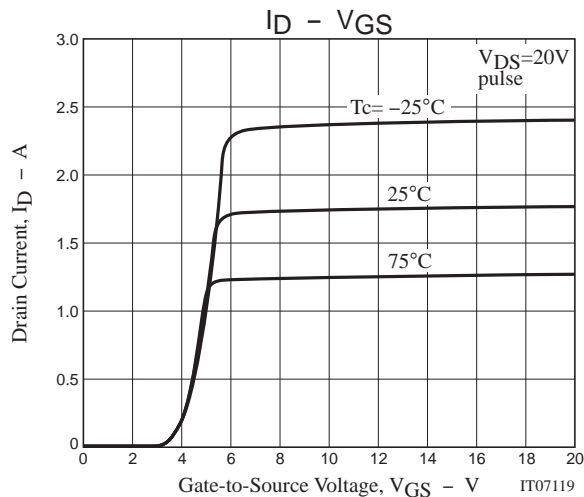
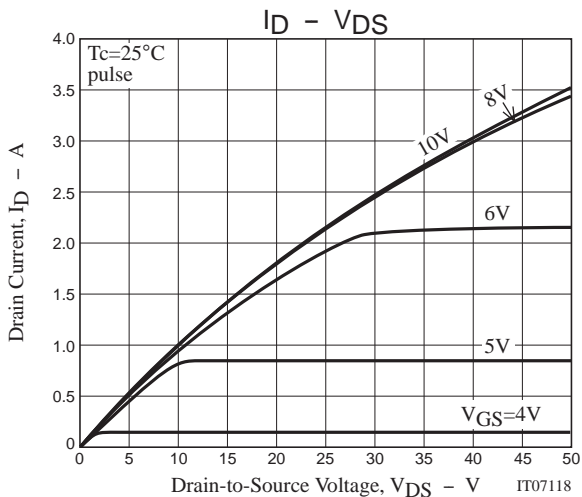


**Fig.2 Switching Time Test Circuit**

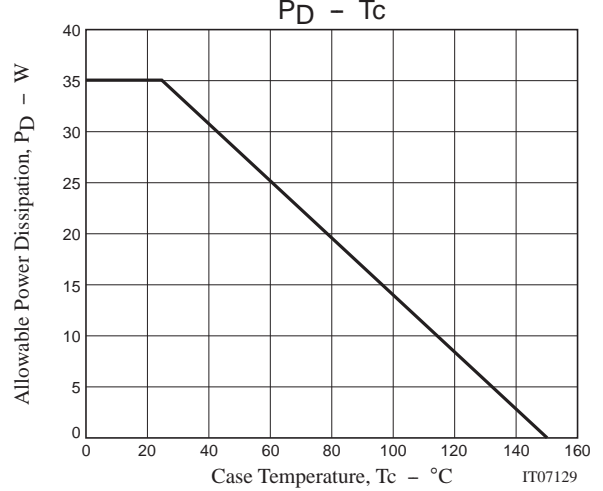
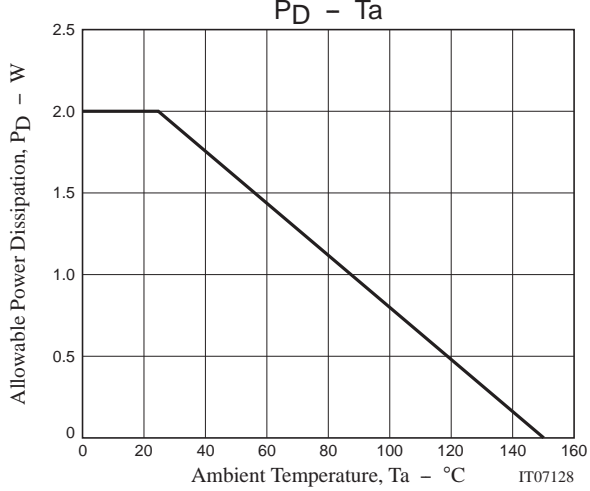
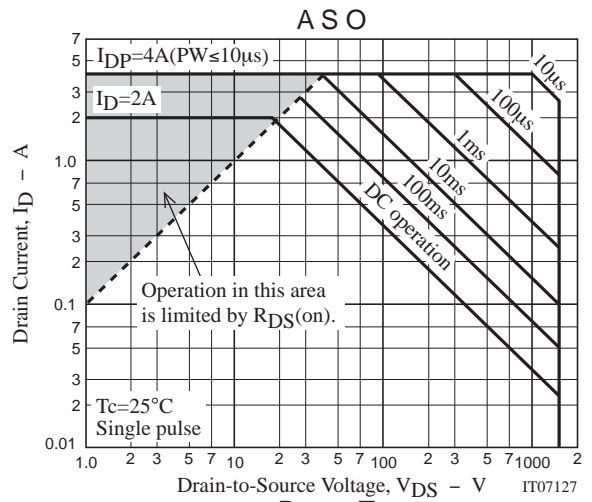
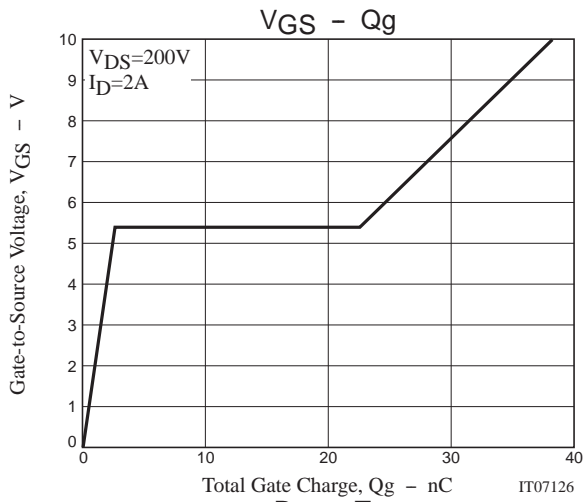


## Ordering Information

Device	Package	Shipping	memo
2SK3745LS-1E	TO-220F-3FS	50pcs./magazine	Pb Free



# 2SK3745LS



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## Magazine Specification

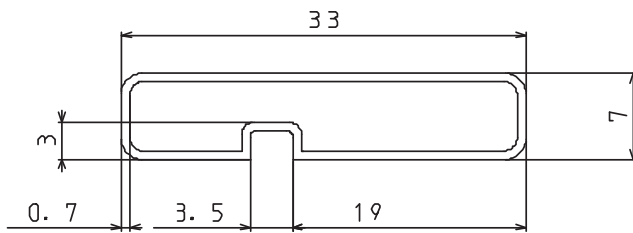
2SK3745LS-1E

### 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

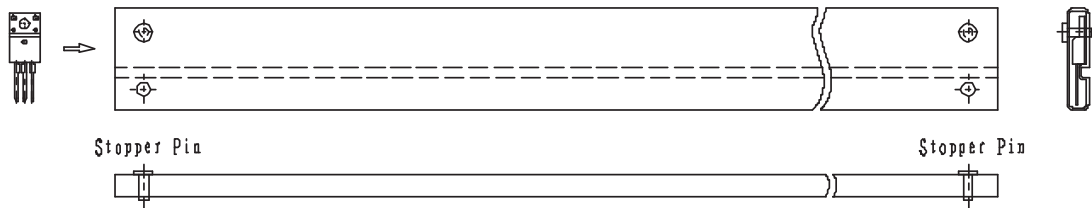
### 2. Magazine dimensions

(unit:mm)

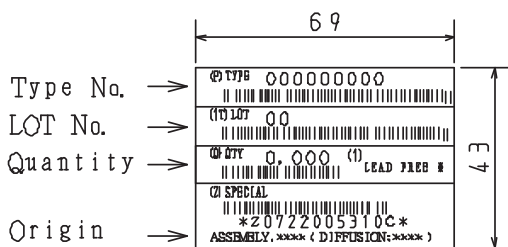


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

### 3. Storage method to magazine

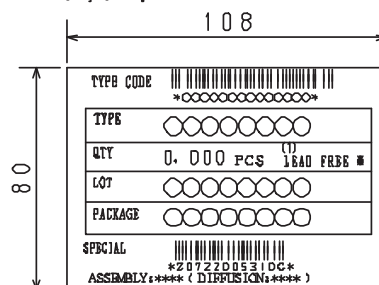


### 4. Inner box label (unit:mm)



### 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.

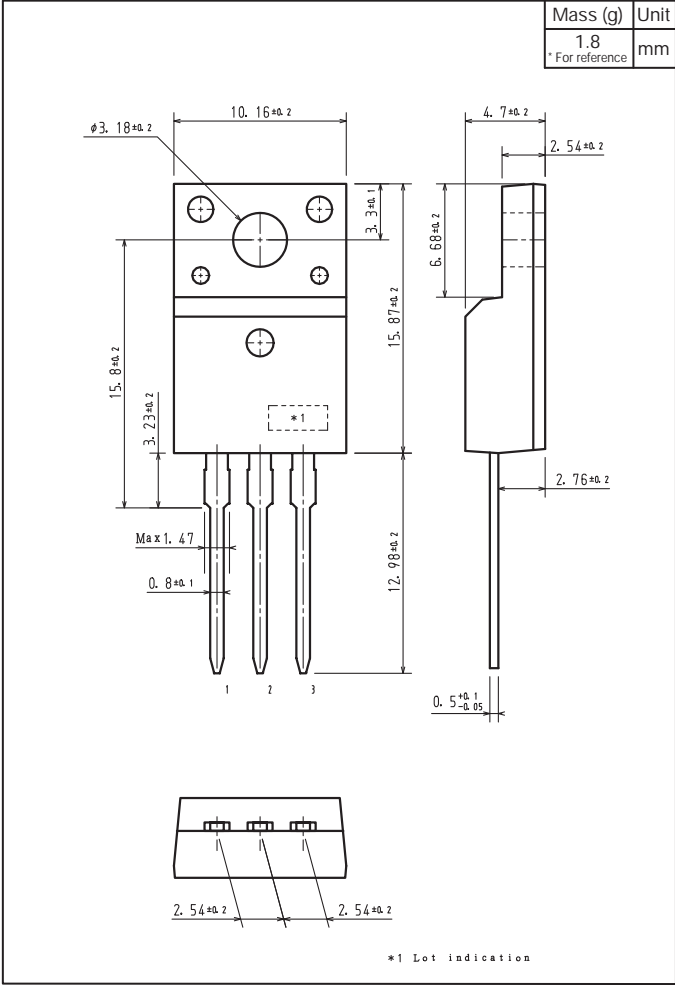


**NOTE (1)**

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  
2SK3745LS-1E



Note on usage : Since the 2SK3745LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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