



2SK4094 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS(on)1}=3.8m\Omega$ (typ.)
- Input capacitance $C_{iss}=12500pF$ (typ.)
- 4V drive

Specifications

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------------|-----------|-------------------------------------------|-------------|------------|
| Drain-to-Source Voltage | V_{DSS} | | 60 | V |
| Gate-to-Source Voltage | V_{GSS} | | ± 20 | V |
| Drain Current (DC) | I_D | | 100 | A |
| Drain Current (Pulse) | I_{DP} | $PW \leq 10\mu s$, duty cycle $\leq 1\%$ | 400 | A |
| Allowable Power Dissipation | PD | | 1.75 | W |
| | | $T_c=25^\circ C$ | 90 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ C$ |
| Avalanche Energy (Single Pulse) *1 | E_{AS} | | 850 | mJ |
| Avalanche Current *2 | I_{AV} | | 70 | A |

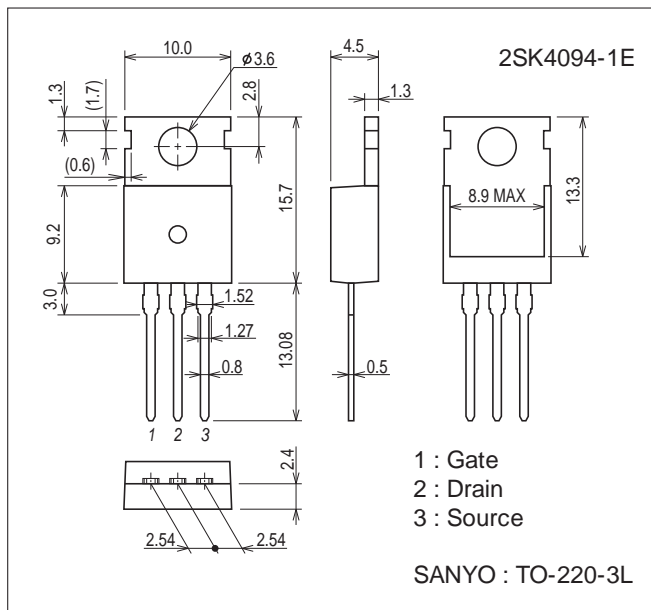
Note : *1 $V_{DD}=30V$, $L=200\mu H$, $I_{AV}=70A$ (Fig.1)

*2 $L \leq 200\mu H$, single pulse

Package Dimensions

unit : mm (typ)

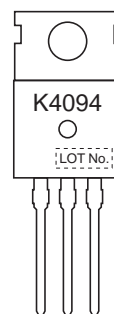
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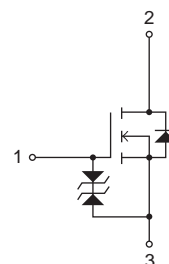
Product & Package Information

- Package : TO-220-3L
- JEITA, JEDEC : SC-46, TO-220AB
- Minimum Packing Quantity : 50 pcs./magazine

Marking



Electrical Connection



2SK4094

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 | 60 | | | V |
| Zero-Gate Voltage Drain Current | IDSS | VDS=60V, 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=50A | 45 | 75 | | S |
| Static Drain-to-Source On-State Resistance | RDS(on)1 | ID=50A, VGS=10V | | 3.8 | 5.0 | mΩ |
| | RDS(on)2 | ID=50A, VGS=4V | | 4.9 | 7.0 | mΩ |
| Input Capacitance | Ciss | VDS=20V, f=1MHz | | 12500 | | pF |
| Output Capacitance | Coss | | | 1200 | | pF |
| Reverse Transfer Capacitance | Crss | | | 950 | | pF |
| Turn-ON Delay Time | td(on) | | See Fig.2 | | 80 | |
| Rise Time | tr | | | 630 | | ns |
| Turn-OFF Delay Time | td(off) | | | 860 | | ns |
| Fall Time | tf | | | 750 | | ns |
| Total Gate Charge | Qg | VDS=30V, VGS=10V, ID=100A | | | 220 | |
| Gate-to-Source Charge | Qgs | | | 30 | | nC |
| Gate-to-Drain "Miller" Charge | Qgd | | | 55 | | nC |
| Diode Forward Voltage | VSD | IS=100A, VGS=0V | | 1.0 | 1.2 | V |

Fig.1 Avalanche Resistance Test Circuit

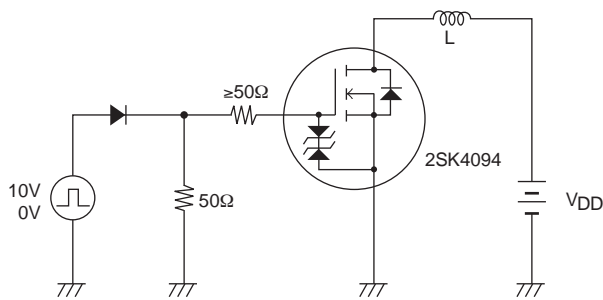
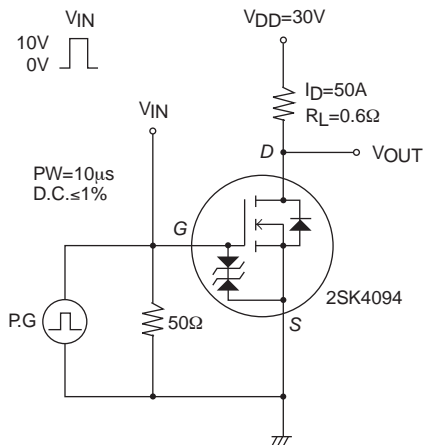
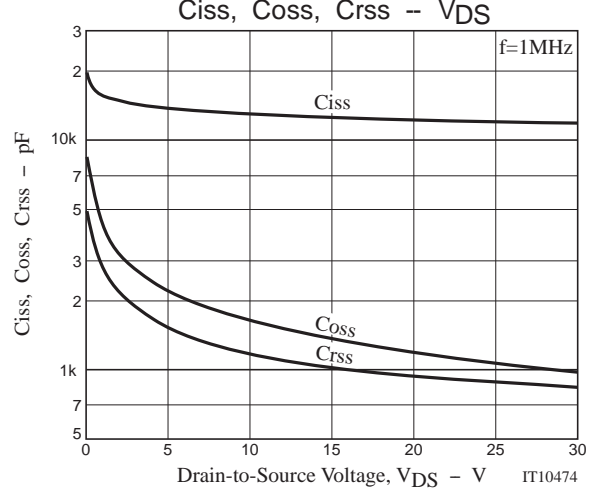
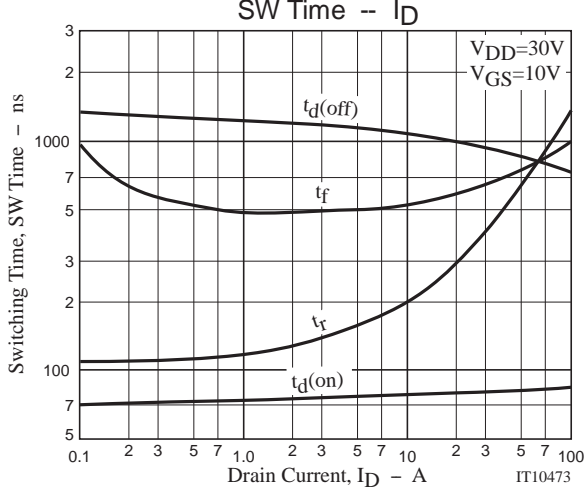
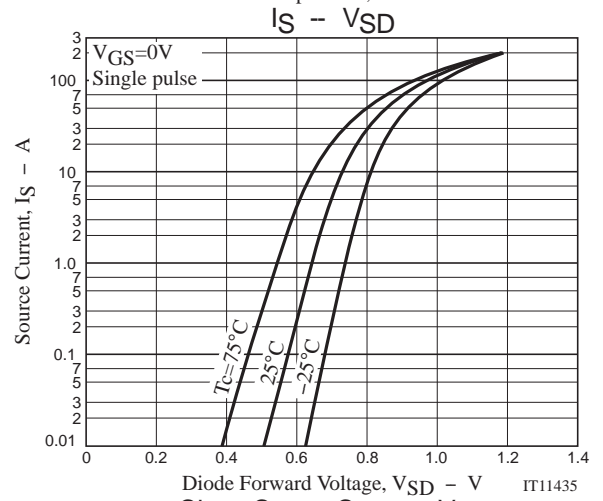
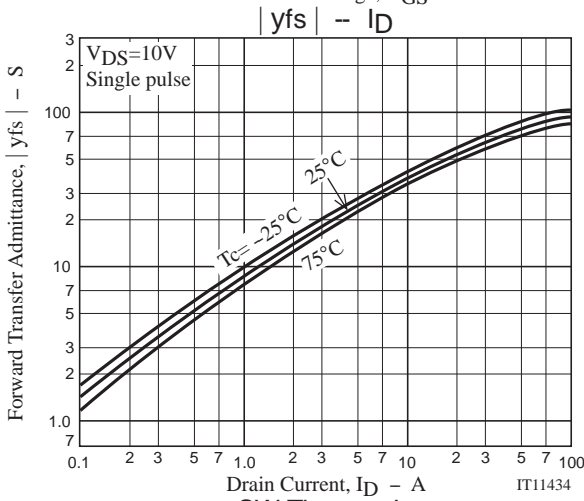
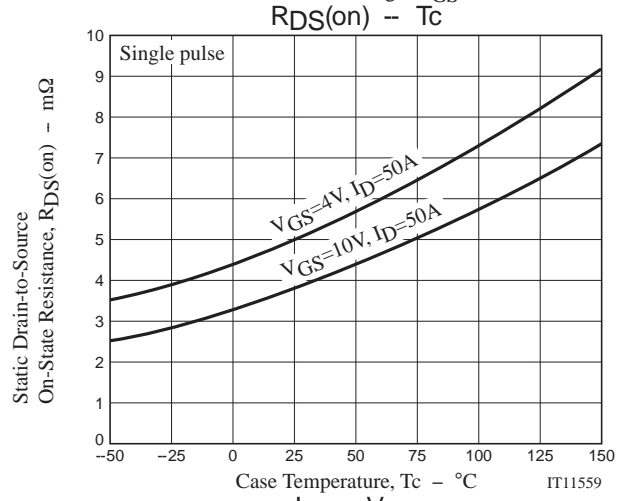
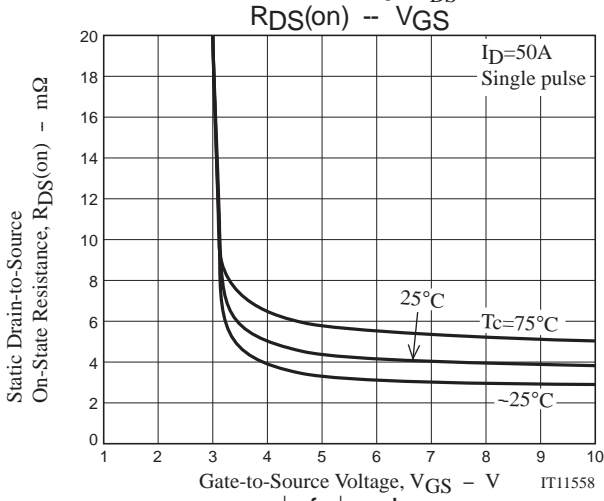
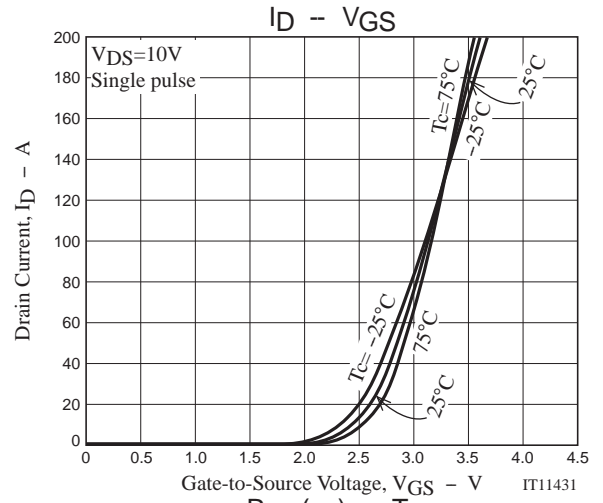
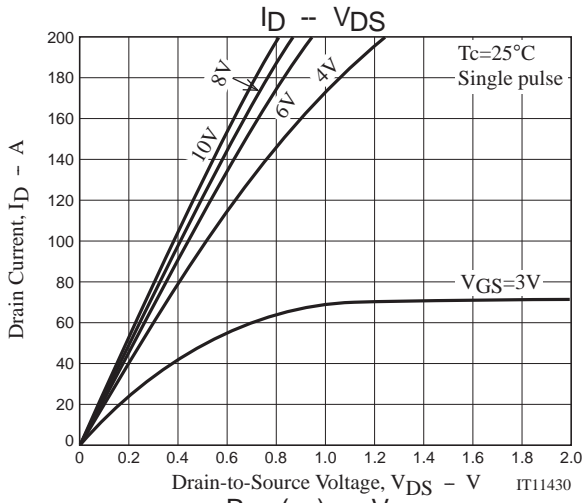


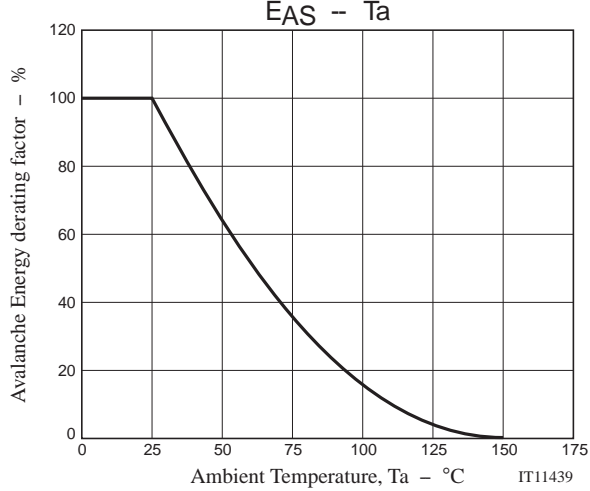
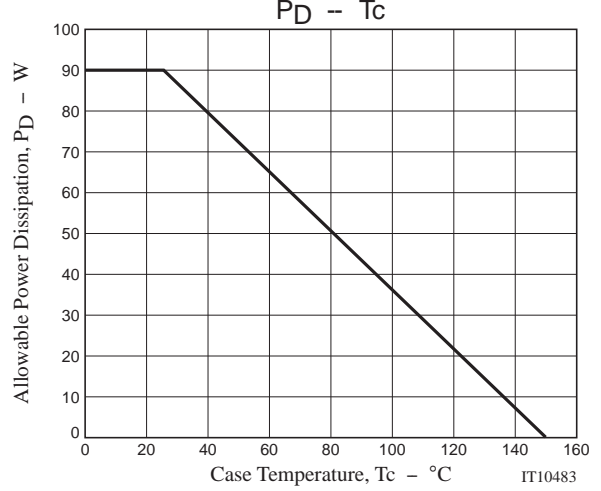
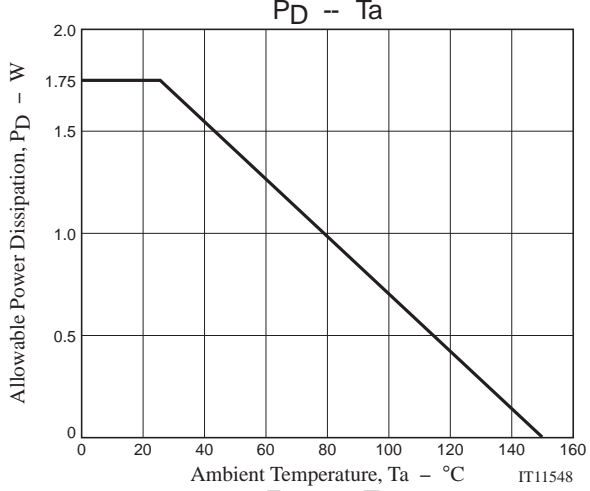
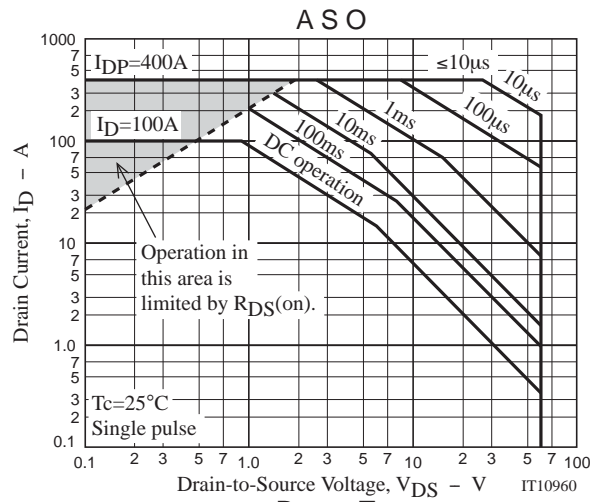
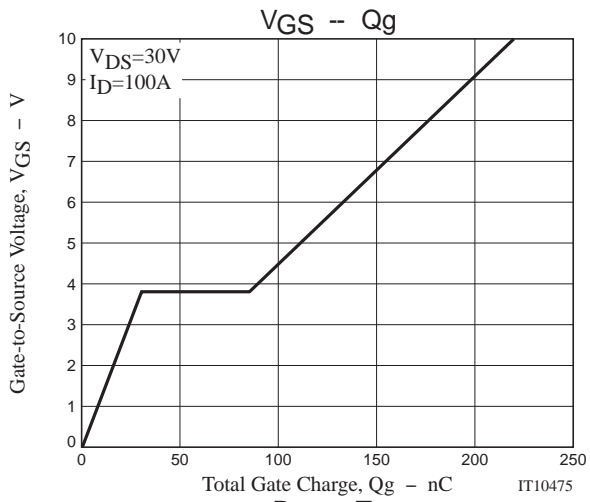
Fig.2 Switching Time Test Circuit



Ordering Information

| Device | Package | Shipping | memo |
|------------|-----------|-----------------|---------|
| 2SK4094-1E | TO-220-3L | 50pcs./magazine | Pb Free |





Magazine Specification

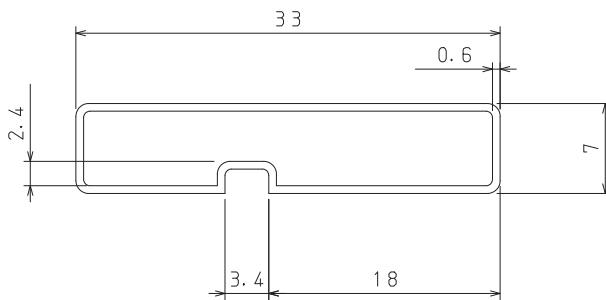
2SK4094-1E

1. Packing Format

| Package Name | Maximum Number of devices contained (pcs) | | | Packing format | |
|--------------|-------------------------------------------|-----------|-----------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| | Magazine | Inner box | Outer box | Inner BOX | Outer BOX |
| TO-220-3L | 50 | 1,000 | 4000 | SPD-0V0001 20 magazines contained Dimensions:mm (external) 568×150×55 | SPD-LV0010 4 inner boxes contained Dimensions:mm (external) 590×225×178 |

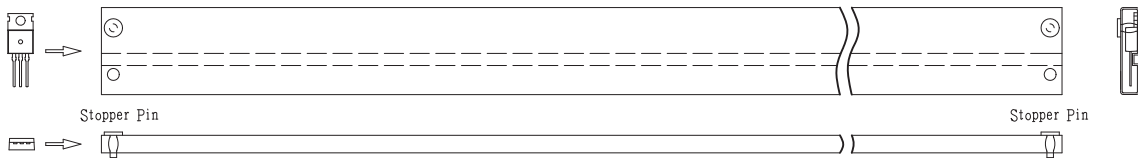
2. Magazine dimensions

(unit:mm)

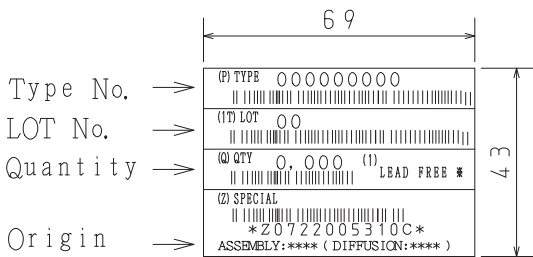


Tolerance=±0.2mm
 Thickness=0.6+0.2/-0mm
 Length =512.6±1mm
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

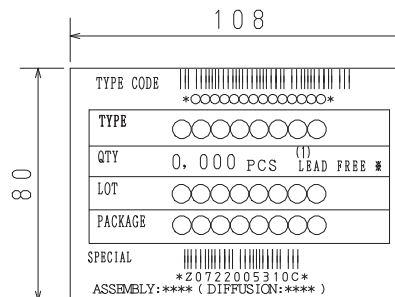


4. Inner box label (unit:mm)



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)

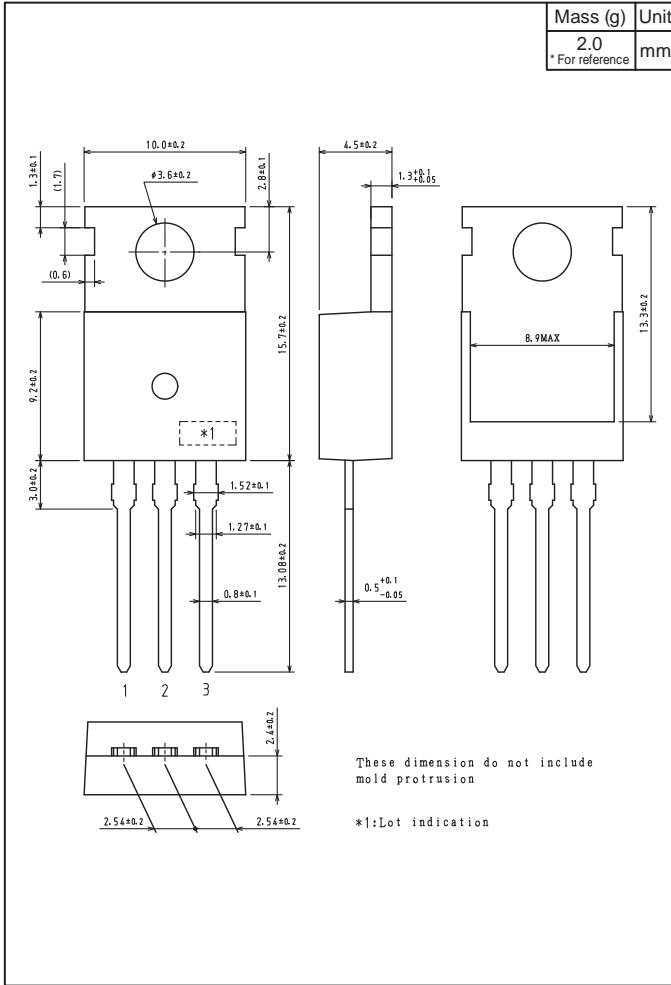
The LEAD FREE * description shows that the surface treatment of the terminal is lead free,

| | |
|-------------|----------------|
| Label | JEITA Phase |
| LEAD FREE 3 | JEITA Phase 3A |

2SK4094

Outline Drawing

2SK4094-1E



Note on usage : Since the 2SK4094 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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