

# 2SJ550(L),2SJ550(S)

Silicon P Channel MOS FET  
High Speed Power Switching

# HITACHI

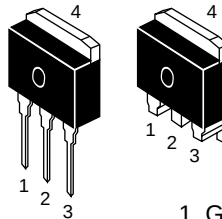
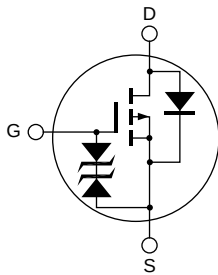
ADE-208-633A (Z)  
2nd. Edition  
Jun 1998

## Features

- Low on-resistance  
 $R_{DS(on)} = 0.075\Omega$  typ.
- Low drive current.
- 4V gate drive devices.
- High speed switching.

## Outline

LDBPAK



1. Gate
2. Drain
3. Source
4. Drain

Absolute Maximum Ratings (Ta = 25°C)

| Item                                   | Symbol                          | Ratings     | Unit |
|----------------------------------------|---------------------------------|-------------|------|
| Drain to source voltage                | $V_{DSS}$                       | −60         | V    |
| Gate to source voltage                 | $V_{GSS}$                       | ±20         | V    |
| Drain current                          | $I_D$                           | −15         | A    |
| Drain peak current                     | $I_{D(pulse)}$ <sup>Note1</sup> | −60         | A    |
| Body-drain diode reverse drain current | $I_{DR}$                        | −15         | A    |
| Avalanche current                      | $I_{AP}$ <sup>Note3</sup>       | −15         | A    |
| Avalanche energy                       | $E_{AR}$ <sup>Note3</sup>       | 19          | mJ   |
| Channel dissipation                    | $P_{ch}$ <sup>Note2</sup>       | 50          | W    |
| Channel temperature                    | $T_{ch}$                        | 150         | °C   |
| Storage temperature                    | $T_{stg}$                       | −55 to +150 | °C   |

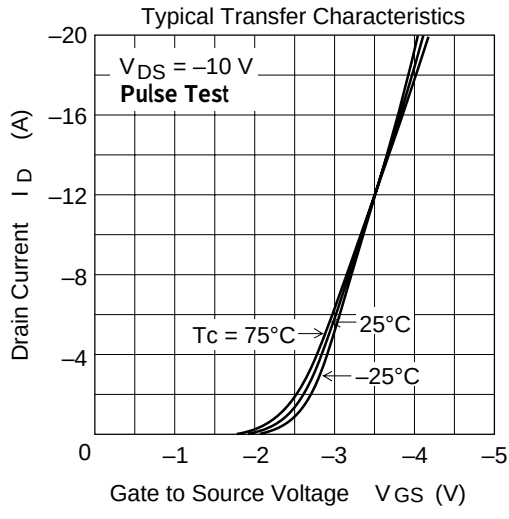
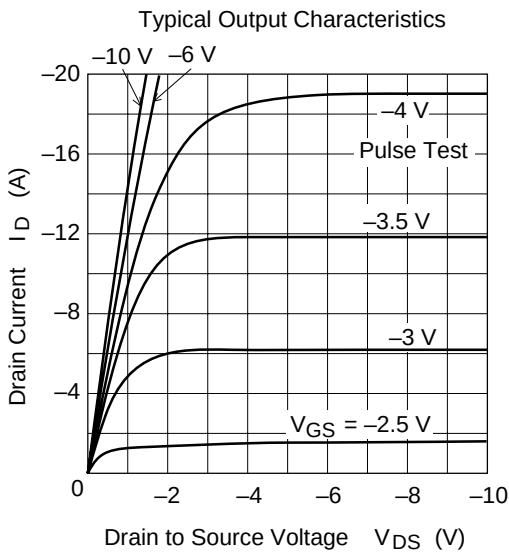
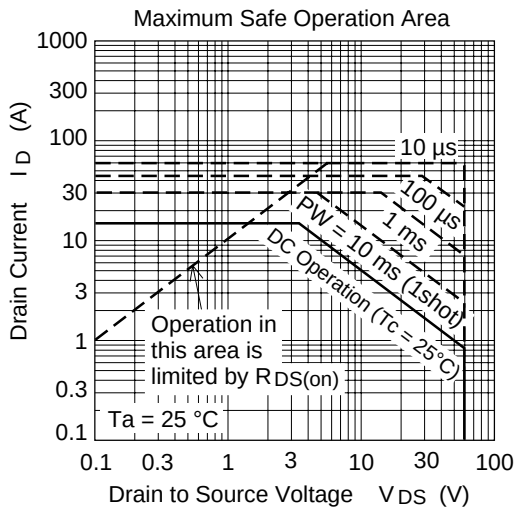
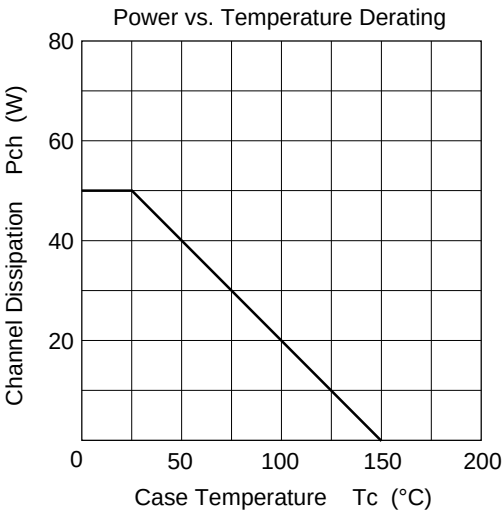
Note: 1.  $PW \leq 10\mu s$ , duty cycle  $\leq 1\%$   
2. Value at  $T_c = 25^\circ C$   
3. Value at  $T_{ch} = 25^\circ C$ ,  $R_g \geq 50\ \Omega$

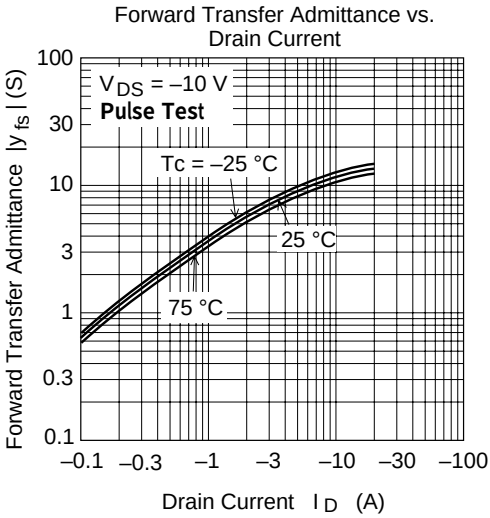
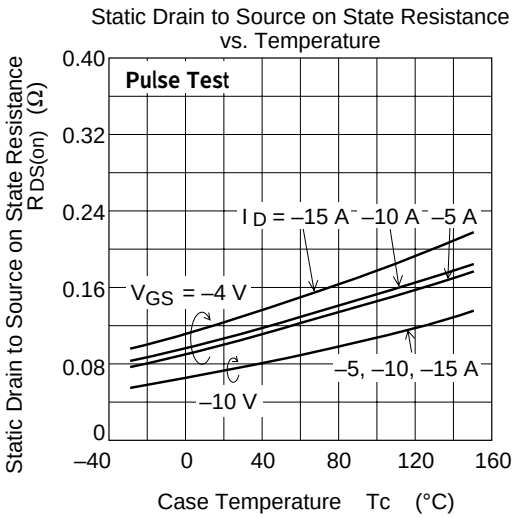
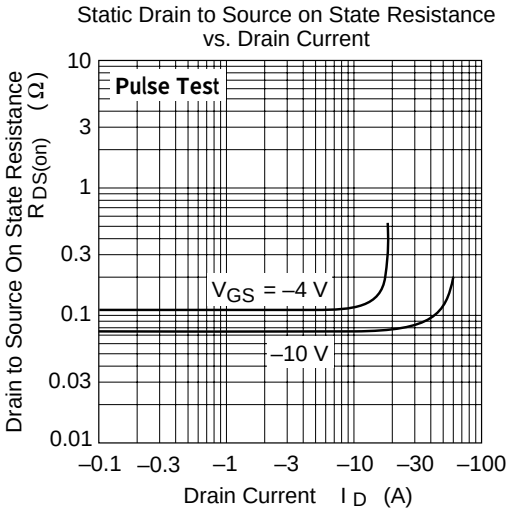
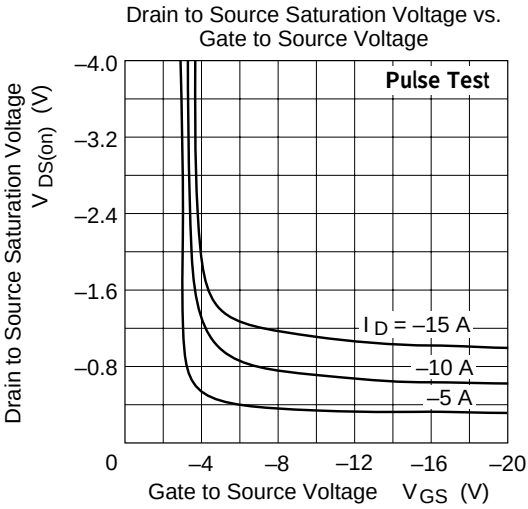
Electrical Characteristics (Ta = 25°C)

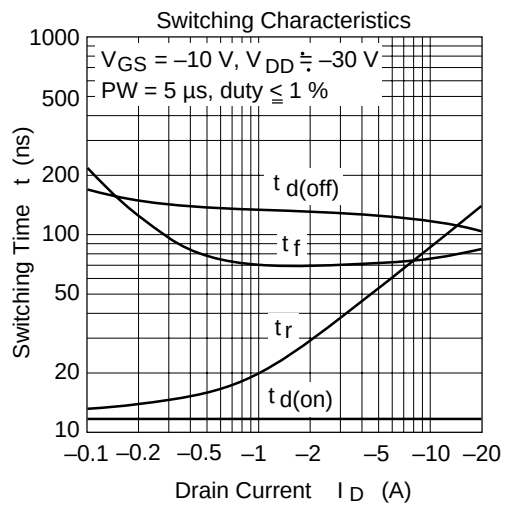
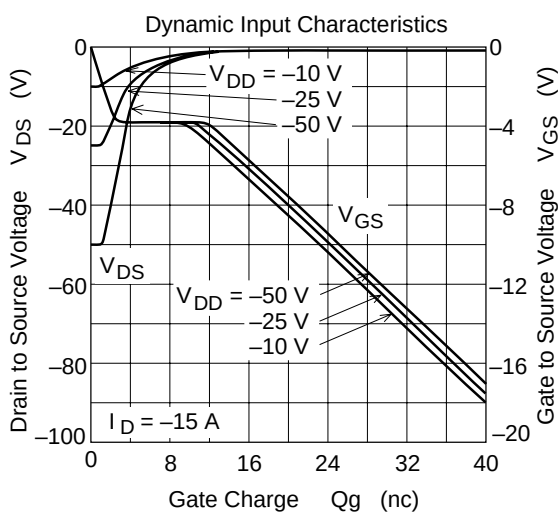
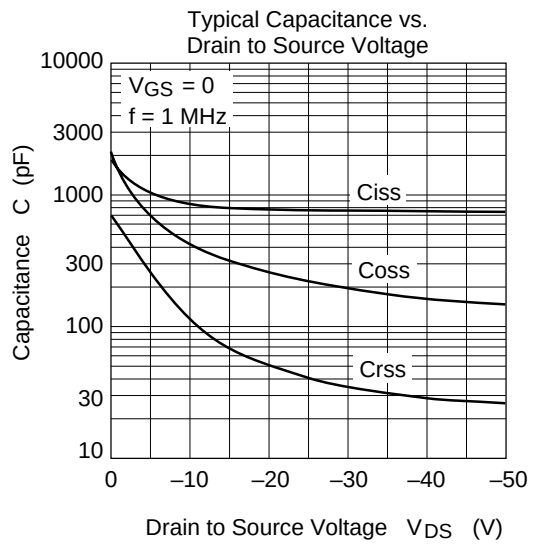
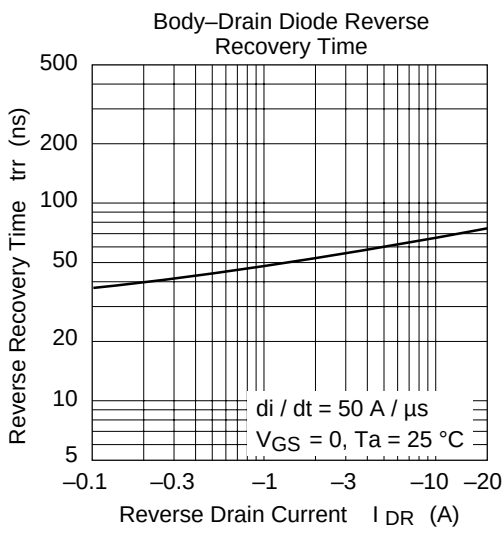
| Item                                       | Symbol        | Min  | Typ   | Max   | Unit     | Test Conditions                                     |
|--------------------------------------------|---------------|------|-------|-------|----------|-----------------------------------------------------|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | −60  | —     | —     | V        | $I_D = -10mA$ , $V_{GS} = 0$                        |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | ±20  | —     | —     | V        | $I_G = \pm 100\mu A$ , $V_{DS} = 0$                 |
| Zero gate voltage drain current            | $I_{DSS}$     | —    | —     | −10   | $\mu A$  | $V_{DS} = -60\ V$ , $V_{GS} = 0$                    |
| Gate to source leak current                | $I_{GSS}$     | —    | —     | ±10   | $\mu A$  | $V_{GS} = \pm 16V$ , $V_{DS} = 0$                   |
| Gate to source cutoff voltage              | $V_{GS(off)}$ | −1.0 | —     | −2.0  | V        | $I_D = -1mA$ , $V_{DS} = -10V$                      |
| Static drain to source on state resistance | $R_{DS(on)}$  | —    | 0.075 | 0.095 | $\Omega$ | $I_D = -8A$ , $V_{GS} = -10V$ <sup>Note4</sup>      |
|                                            | $R_{DS(on)}$  | —    | 0.105 | 0.155 | $\Omega$ | $I_D = -8A$ , $V_{GS} = -4V$ <sup>Note4</sup>       |
| Forward transfer admittance                | $ y_{fs} $    | 6.5  | 11    | —     | S        | $I_D = -8A$ , $V_{DS} = -10V$ <sup>Note4</sup>      |
| Input capacitance                          | $C_{iss}$     | —    | 850   | —     | pF       | $V_{DS} = -10V$                                     |
| Output capacitance                         | $C_{oss}$     | —    | 420   | —     | pF       | $V_{GS} = 0$                                        |
| Reverse transfer capacitance               | $C_{rss}$     | —    | 110   | —     | pF       | $f = 1MHz$                                          |
| Turn-on delay time                         | $t_{d(on)}$   | —    | 12    | —     | ns       | $V_{GS} = -10V$ , $I_D = -8A$                       |
| Rise time                                  | $t_r$         | —    | 75    | —     | ns       | $R_L = 3.75\Omega$                                  |
| Turn-off delay time                        | $t_{d(off)}$  | —    | 125   | —     | ns       |                                                     |
| Fall time                                  | $t_f$         | —    | 75    | —     | ns       |                                                     |
| Body–drain diode forward voltage           | $V_{DF}$      | —    | −1.1  | —     | V        | $I_F = -15A$ , $V_{GS} = 0$                         |
| Body–drain diode reverse recovery time     | $t_{rr}$      | —    | 70    | —     | ns       | $I_F = -15A$ , $V_{GS} = 0$<br>$diF/dt = 50A/\mu s$ |

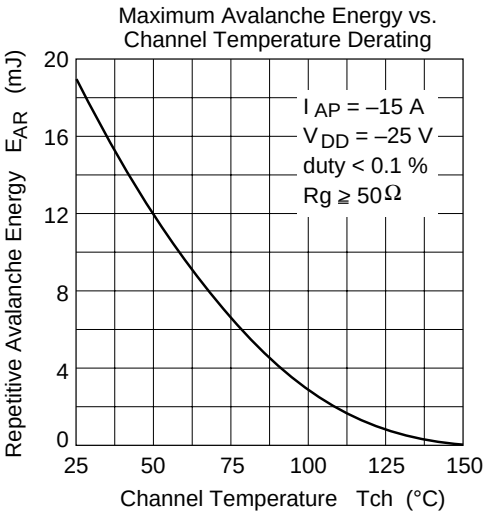
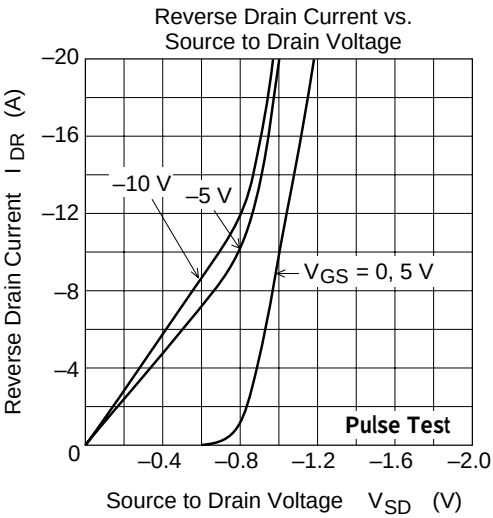
Note: 4. Pulse test

Main Characteristics

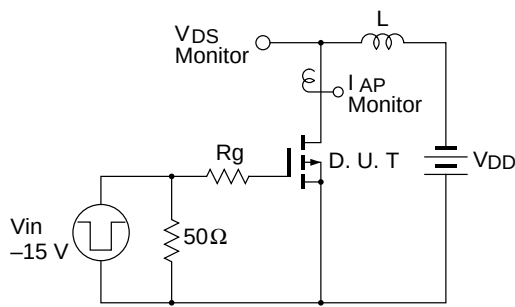




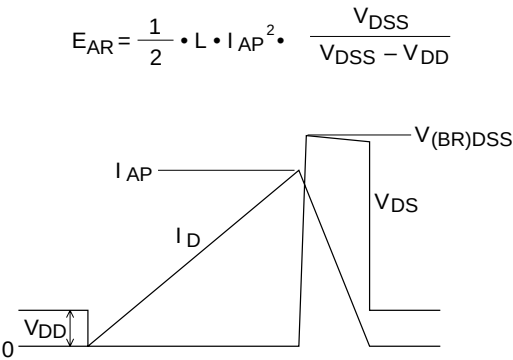


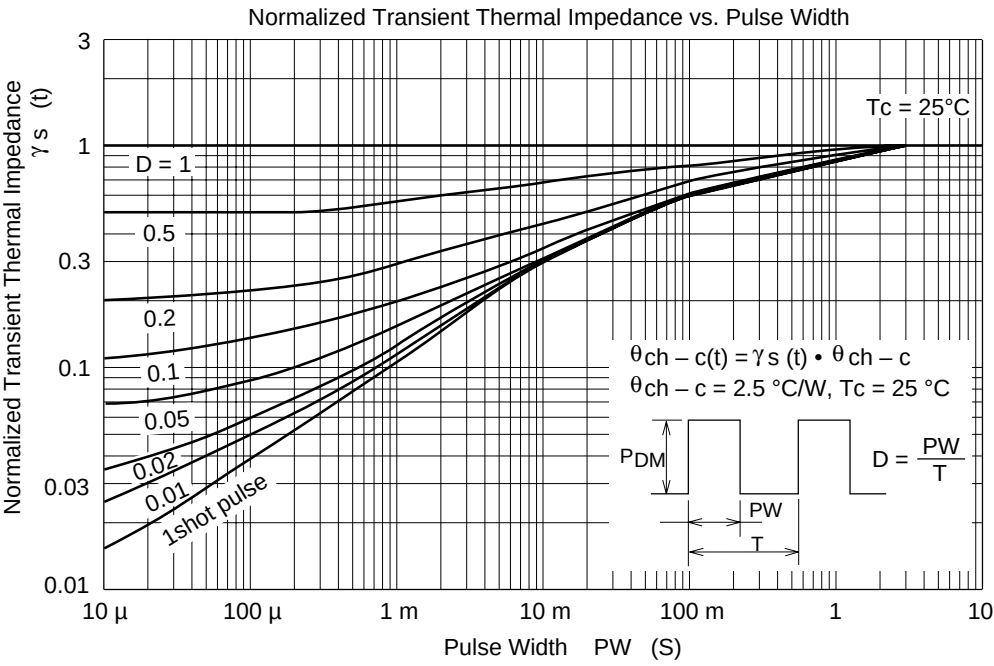


Avalanche Test Circuit

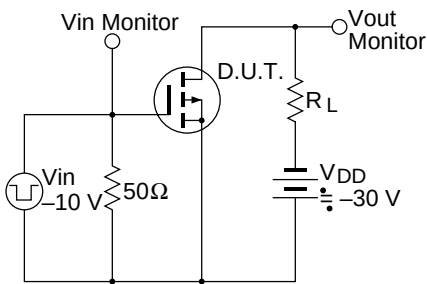


Avalanche Waveform

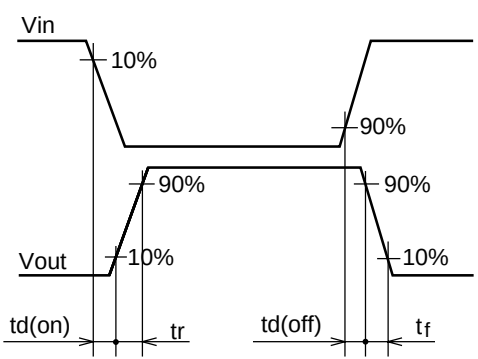




Switching Time Test Circuit

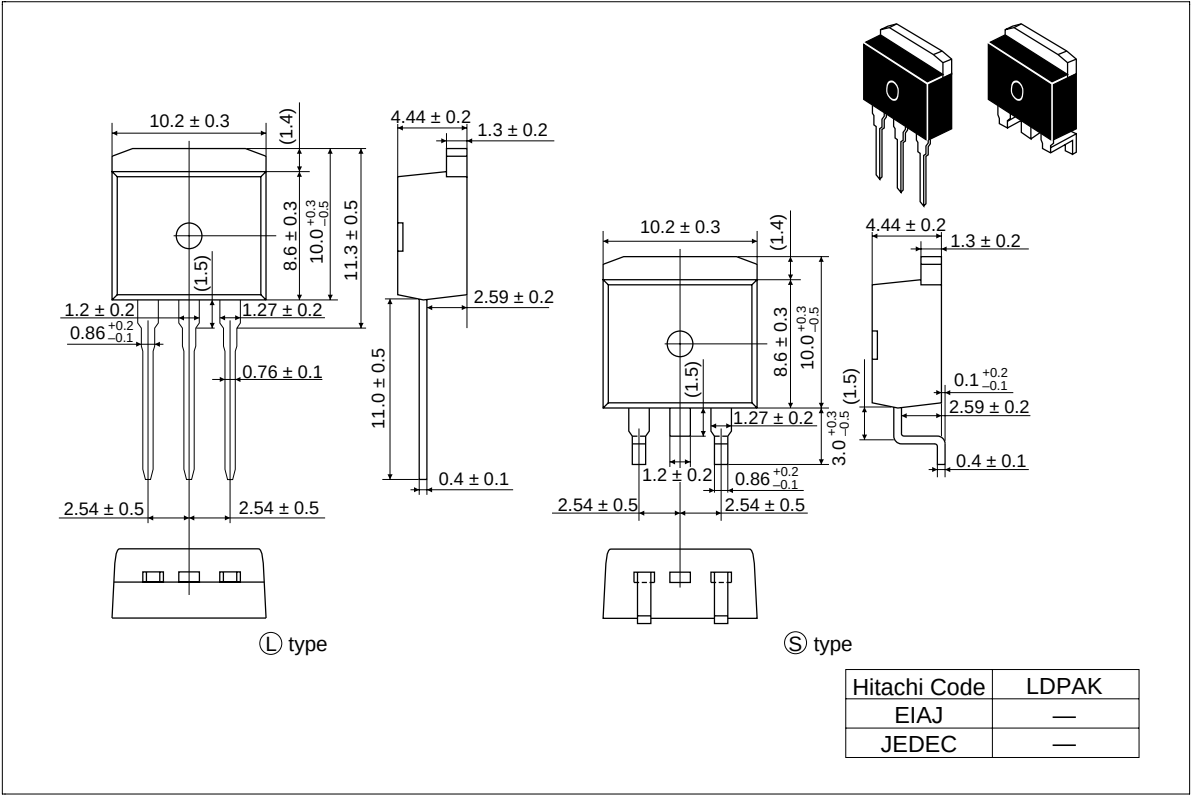


Waveform



Package Dimensions

Unit: mm





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