

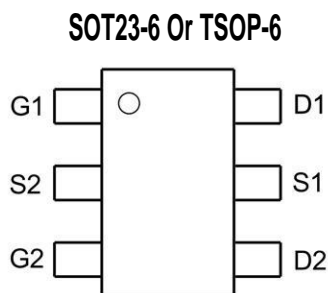
Product Summary

- 20V, 3.5A, $R_{DS(ON)} = 40m\Omega$ @ $V_{GS} = 4.5V$.
 $R_{DS(ON)} = 50m\Omega$ @ $V_{GS} = 2.5V$.
- -20V, -2.8A, $R_{DS(ON)} = 85m\Omega$ @ $V_{GS} = -4.5V$.
 $R_{DS(ON)} = 100m\Omega$ @ $V_{GS} = -2.5V$.

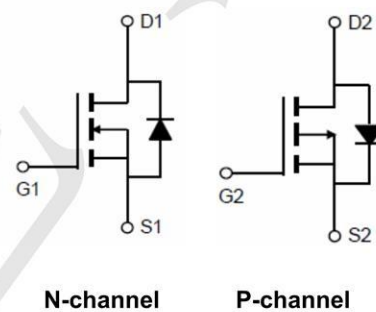
Application

- DC-DC Converters.
- Load Switch.
- Power Management.

Package and Pin Configuration



Circuit diagram



Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

| Parameter | Symbol | N-Channel | P-Channel | Units |
|---------------------------------------|----------------|------------|-----------|------------|
| Drain-Source Voltage | V_{DS} | 20 | -20 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | ± 12 | V |
| Drain Current-Continuous | I_D | 3.5 | -2.8 | A |
| Drain Current-Pulsed ^a | I_{DM} | 14 | 10 | A |
| Maximum Power Dissipation | P_D | 1.14 | | W |
| Operating and Store Temperature Range | T_J, T_{stg} | -55 to 150 | | $^\circ C$ |

Thermal Characteristic

| Parameter | Symbol | Limit | Units |
|--|-----------------|-------|--------------|
| Thermal Resistance, Junction-to-Ambient ^b | $R_{\theta JA}$ | 110 | $^\circ C/W$ |

N-CH Electrical Characteristics (T_A=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|---------------------|--|-----|-----|------|-------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} = 0V, I _D = 250μA | 20 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 20V, V _{GS} = 0V | | | 1 | μA |
| Gate Body Leakage Current, Forward | I _{GSSF} | V _{GS} = 12V, V _{DS} = 0V | | | 100 | nA |
| Gate Body Leakage Current, Reverse | I _{GSSR} | V _{GS} = -12V, V _{DS} = 0V | | | -100 | nA |
| On Characteristics^c | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{GS} = V _{DS} , I _D = 250μA | 0.4 | | 1.2 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} = 4.5V, I _D = 3.5A | | 40 | 55 | mΩ |
| | | V _{GS} = 2.5V, I _D = 2.0A | | 50 | 80 | mΩ |
| Dynamic Characteristics^d | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} = 10V, V _{GS} = 0V, f = 1.0 MHz | | 380 | | pF |
| Output Capacitance | C _{oss} | | | 90 | | pF |
| Reverse Transfer Capacitance | C _{rss} | | | 60 | | pF |
| Switching Characteristics^d | | | | | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 10V, I _D = 3.5A, V _{GS} = 4.5V, R _{GEN} = 6Ω | | 16 | | ns |
| Turn-On Rise Time | t _r | | | 16 | | ns |
| Turn-Off Delay Time | t _{d(off)} | | | 32 | | ns |
| Turn-Off Fall Time | t _f | | | 7 | | ns |
| Total Gate Charge | Q _g | V _{DS} = 10V, I _D = 3.5A, V _{GS} = 3.3V | | 3.6 | | nC |
| Gate-Source Charge | Q _{gs} | | | 1.0 | | nC |
| Gate-Drain Charge | Q _{gd} | | | 1.2 | | nC |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| Drain-Source Diode Forward Current ^b | I _S | | | | 1 | A |
| Drain-Source Diode Forward Voltage ^c | V _{SD} | V _{GS} = 0V, I _S = 1A | | | 1.1 | V |

P-CH Electrical Characteristics (T_A=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|---------------------|---|------|------|------|-------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} = 0V, I _D = -250μA | -20 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = -16V, V _{GS} = 0V | | | -1 | μA |
| Gate Body Leakage Current, Forward | I _{GSSF} | V _{GS} = 12V, V _{DS} = 0V | | | 100 | nA |
| Gate Body Leakage Current, Reverse | I _{GSSR} | V _{GS} = -12V, V _{DS} = 0V | | | -100 | nA |
| On Characteristics^c | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{GS} = V _{DS} , I _D = -250μA | -0.4 | | -1.2 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} = -4.5V, I _D = -2.5A | | 85 | 100 | mΩ |
| | | V _{GS} = -2.5V, I _D = -1.5A | | 100 | 145 | mΩ |
| Dynamic Characteristics^d | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} = -10V, V _{GS} = 0V, f = 1.0 MHz | | 375 | | pF |
| Output Capacitance | C _{oss} | | | 90 | | pF |
| Reverse Transfer Capacitance | C _{rss} | | | 60 | | pF |
| Switching Characteristics^d | | | | | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = -10V, I _D = -2.5A, V _{GS} = -4.5V, R _{GEN} = 3Ω | | 17 | | ns |
| Turn-On Rise Time | t _r | | | 17 | | ns |
| Turn-Off Delay Time | t _{d(off)} | | | 27 | | ns |
| Turn-Off Fall Time | t _f | | | 7 | | ns |
| Total Gate Charge | Q _g | V _{DS} = -10V, I _D = -2.0A, V _{GS} = -3.3V | | 2.9 | | nC |
| Gate-Source Charge | Q _{gs} | | | 0.46 | | nC |
| Gate-Drain Charge | Q _{gd} | | | 1.19 | | nC |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| Drain-Source Diode Forward Current ^b | I _S | | | | -1 | A |
| Drain-Source Diode Forward Voltage ^c | V _{SD} | V _{GS} = 0V, I _S = -1A | | | -1.1 | V |

N- Channel Typical Electrical and Thermal Characteristics

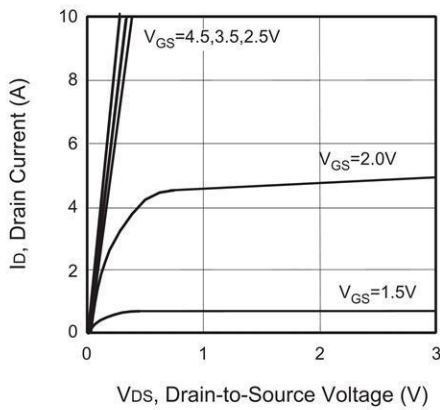


Figure 1. Output Characteristics

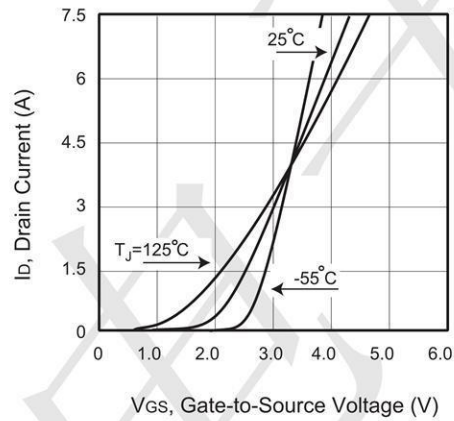


Figure 2. Transfer Characteristics

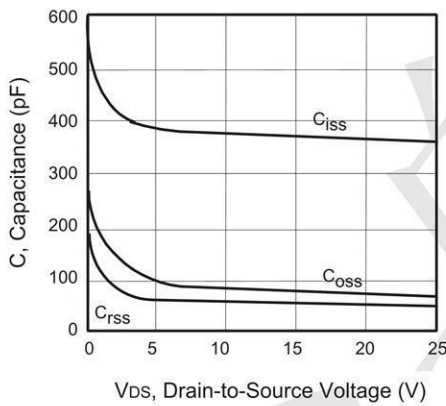


Figure 3. Capacitance

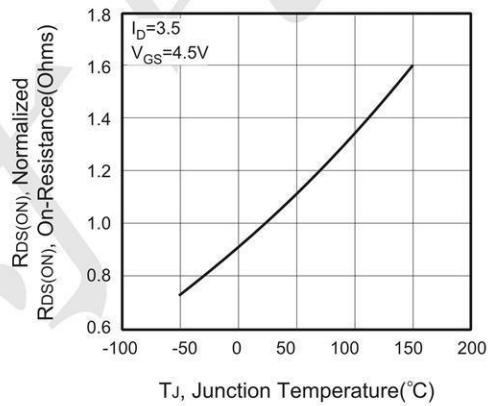


Figure 4. On-Resistance Variation with Temperature

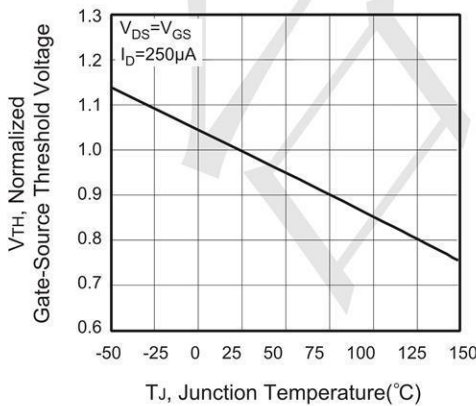


Figure 5. Gate Threshold Variation with Temperature

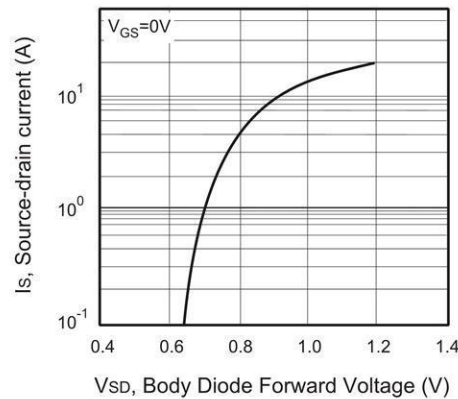


Figure 6. Body Diode Forward Voltage Variation with Source Current

P-CHANNEL

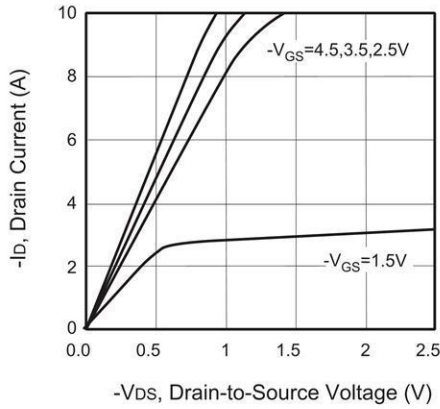


Figure 1. Output Characteristics

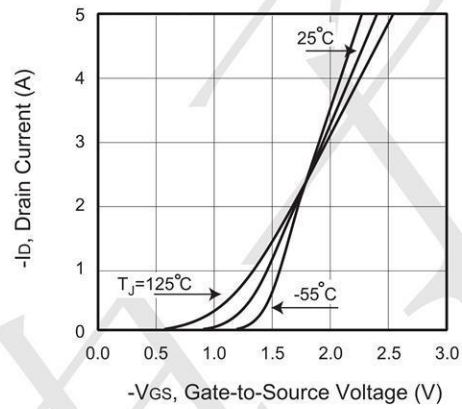


Figure 2. Transfer Characteristics

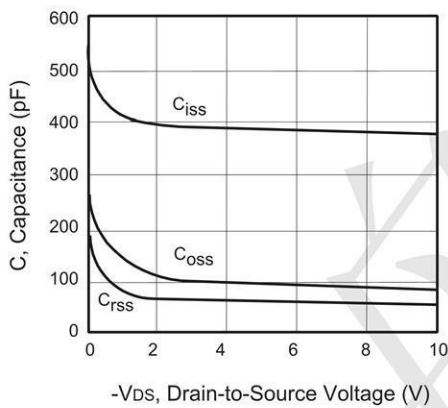


Figure 3. Capacitance

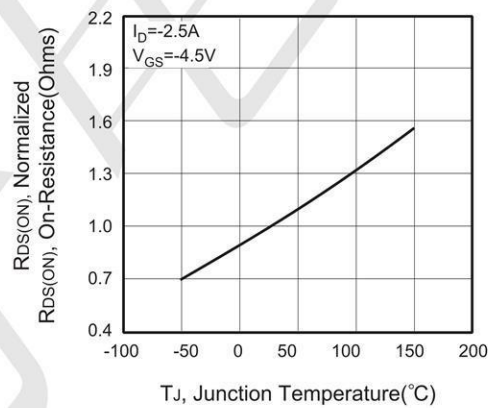


Figure 4. On-Resistance Variation with Temperature

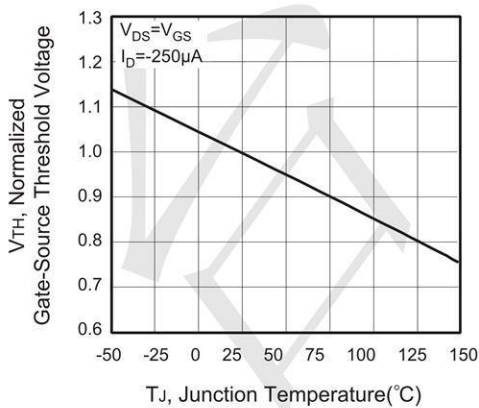


Figure 5. Gate Threshold Variation with Temperature

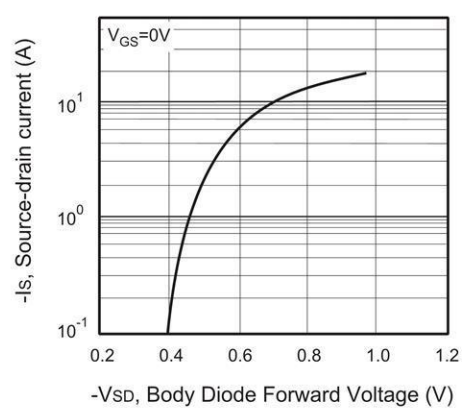


Figure 6. Body Diode Forward Voltage Variation with Source Current

N-CHANNEL

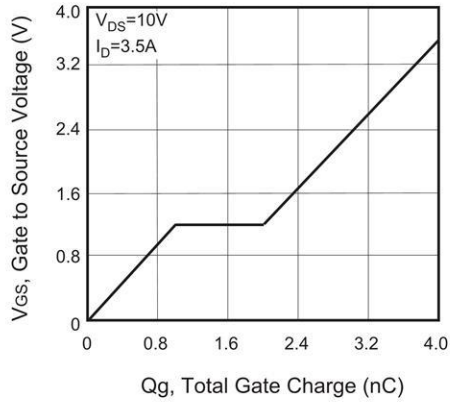


Figure 13. Gate Charge

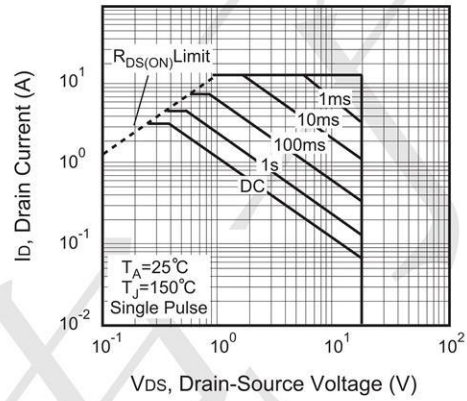


Figure 14. Maximum Safe Operating Area

P-CHANNEL

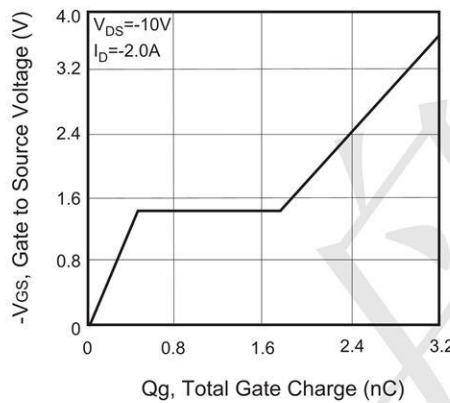


Figure 15. Gate Charge

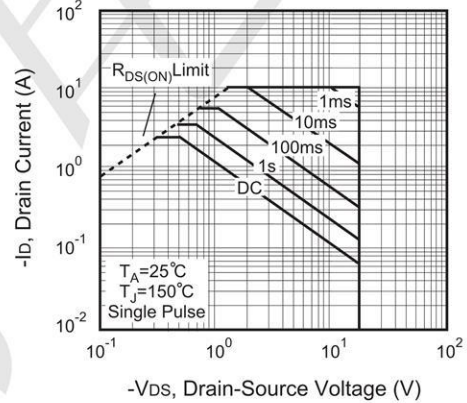


Figure 16. Maximum Safe Operating Area

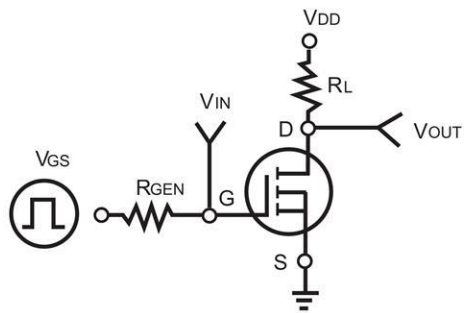


Figure 17. Switching Test Circuit

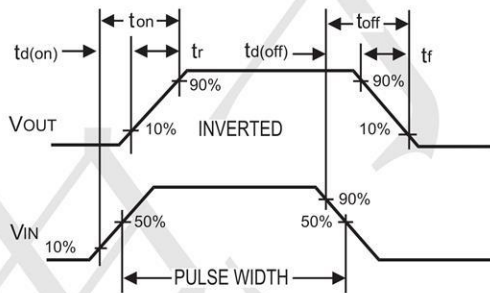


Figure 18. Switching Waveforms

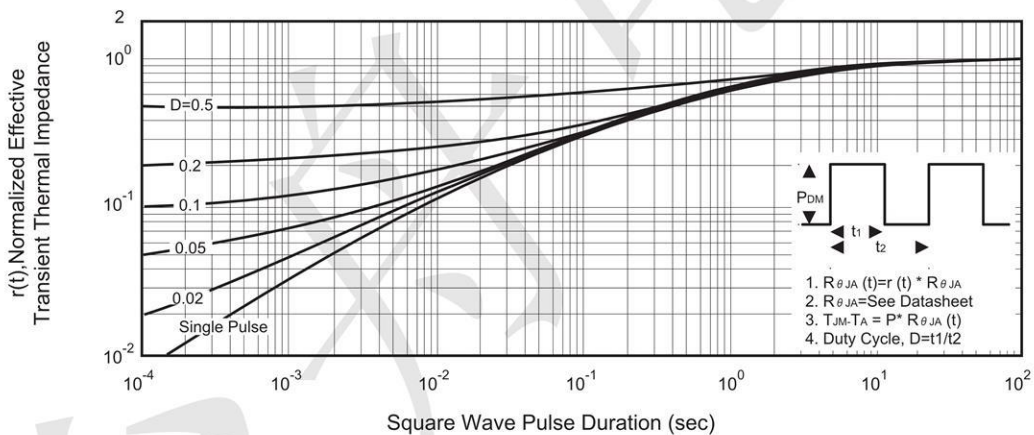


Figure 19. Normalized Thermal Transient Impedance Curve



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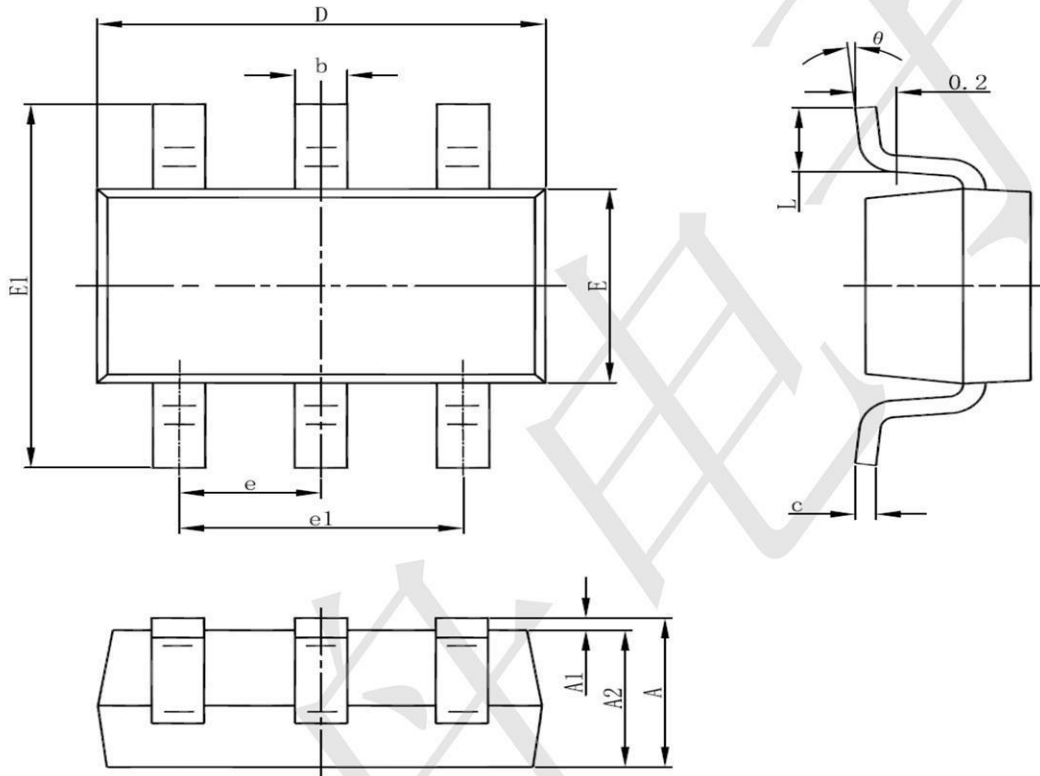
—台丹电子—

FDC6327C

N and P-Channel Enhancement Mode Power MOSFET

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SOT23-6 Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

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