

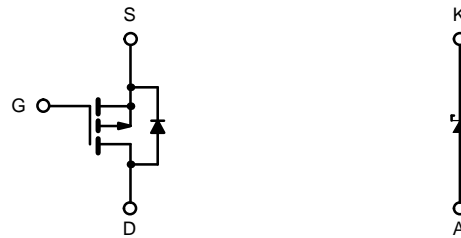
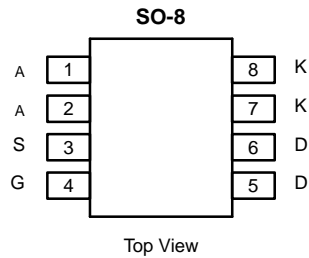


## P-Channel 30-V (D-S) MOSFET with Schottky Diode

MOSFET PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-30	0.085 @ $V_{GS} = -10$ V	$\pm 3.5$
	0.180 @ $V_{GS} = -4.5$ V	$\pm 2.5$

SCHOTTKY PRODUCT SUMMARY		
$V_{KA}$ (V)	$V_F$ (V) Diode Forward Voltage	$I_F$ (A)
30	0.5 V @ 1.0 A	1.4

LITTLE FOOT Plus™



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage (MOSFET)		$V_{DS}$	-30	V
Reverse Voltage (Schottky)		$V_{KA}$	30	
Gate-Source Voltage (MOSFET)		$V_{GS}$	$\pm 20$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) (MOSFET) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	$I_D$	$\pm 3.5$	A
	$T_A = 70^\circ\text{C}$		$\pm 2.8$	
Pulsed Drain Current (MOSFET)		$I_{DM}$	$\pm 20$	
Continuous Source Current (MOSFET Diode Conduction) <sup>a, b</sup>		$I_S$	-1.7	
Average Forward Current (Schottky)		$I_F$	1.4	
Pulsed Forward Current (Schottky)		$I_{FM}$	30	
Maximum Power Dissipation (MOSFET) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	$P_D$	2	W
	$T_A = 70^\circ\text{C}$		1.3	
Maximum Power Dissipation (Schottky) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$		1.9	
	$T_A = 70^\circ\text{C}$		1.2	
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter	Device	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ( $t \leq 10$ sec) <sup>a</sup>	MOSFET	$R_{thJA}$		62.5	$^\circ\text{C/W}$
	Schottky			65	
Maximum Junction-to-Ambient ( $t = \text{steady state}$ ) <sup>a</sup>	MOSFET		90		
	Schottky		92		

Notes

- a. Surface Mounted on FR4 Board.
- b.  $t \leq 10$  sec.



<b>MOSFET SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)</b>						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-1.0			V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -30 V, V <sub>GS</sub> = 0 V			-1	μA
		V <sub>DS</sub> = -30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			-25	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ -5 V, V <sub>GS</sub> = -10 V	-15			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = -10 V, I <sub>D</sub> = -2.5 A		0.066	0.085	Ω
		V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -1.8 A		0.125	0.180	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -10 V, I <sub>D</sub> = -2.5 A		5.0		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = -1.7 A, V <sub>GS</sub> = 0 V		-0.8	-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = -10 V, I <sub>D</sub> = -2.5 A		8.7	15	nC
Gate-Source Charge	Q <sub>gs</sub>			1.9		
Gate-Drain Charge	Q <sub>gd</sub>			1.3		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ -1 A, V <sub>GEN</sub> = -10 V, R <sub>G</sub> = 6 Ω		7	15	ns
Rise Time	t <sub>r</sub>			9	18	
Turn-Off Delay Time	t <sub>d(off)</sub>			14	27	
Fall Time	t <sub>f</sub>			8	15	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = -1.7 A, di/dt = 100 A/μs		50	80	

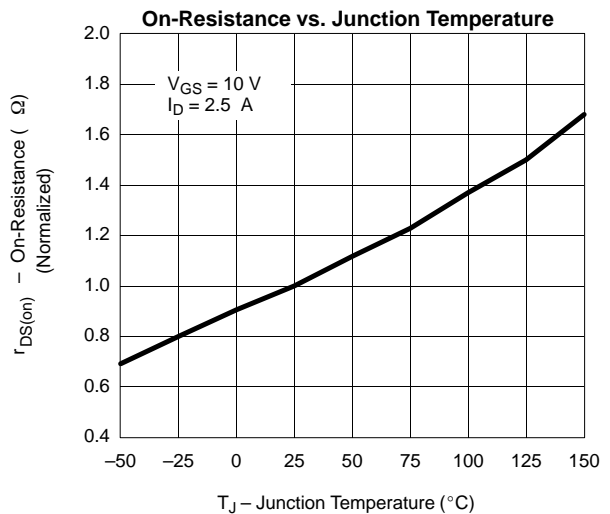
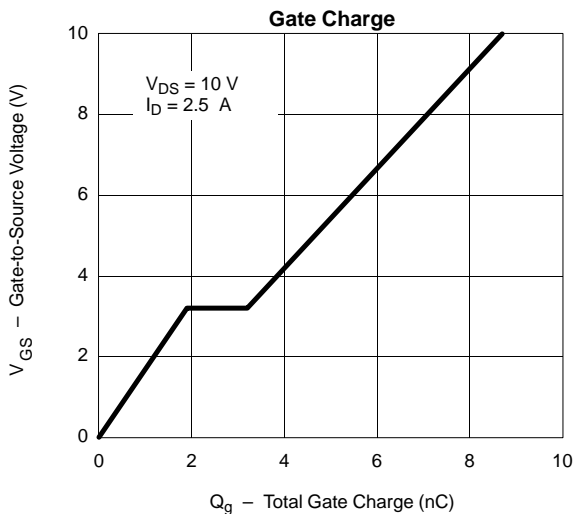
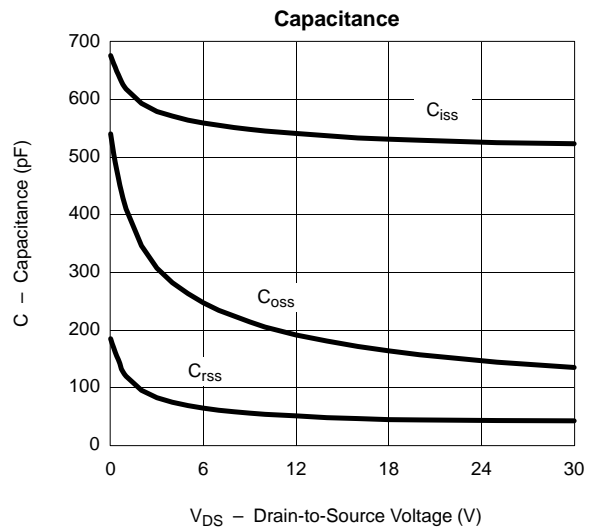
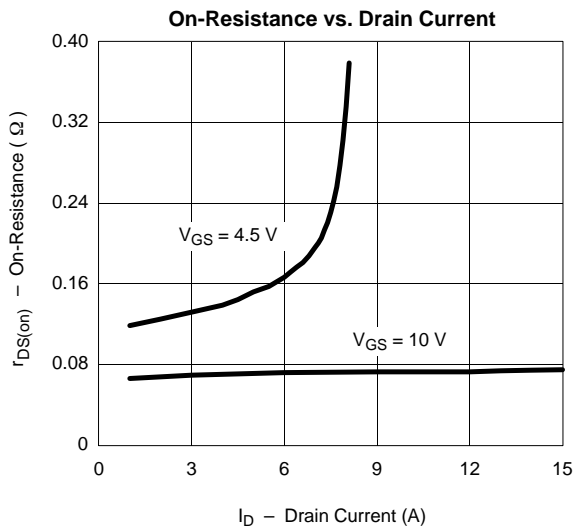
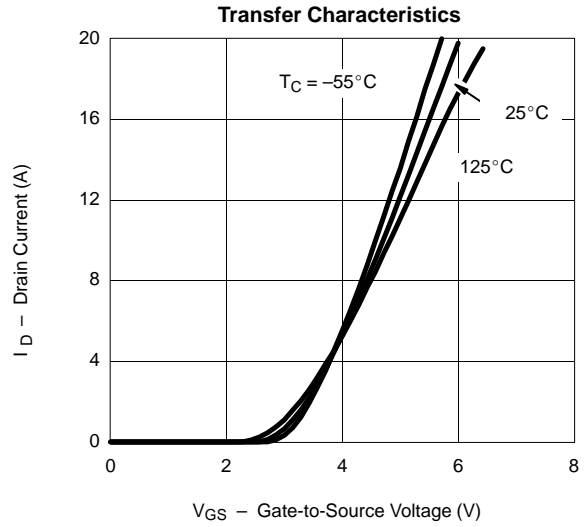
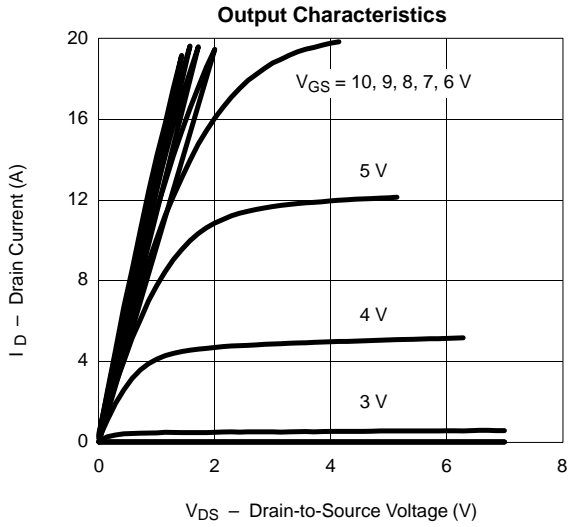
Notes

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

<b>SCHOTTKY SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)</b>						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Forward Voltage Drop	V <sub>F</sub>	I <sub>F</sub> = 1.0 A		0.45	0.5	V
		I <sub>F</sub> = 1.0 A, T <sub>J</sub> = 125 °C		0.36	0.42	
Maximum Reverse Leakage Current	I <sub>rm</sub>	V <sub>r</sub> = 30 V		0.004	0.100	mA
		V <sub>r</sub> = 30 V, T <sub>J</sub> = 100 °C		0.7	10	
		V <sub>r</sub> = -30 V, T <sub>J</sub> = 125 °C		3.0	20	
Junction Capacitance	C <sub>T</sub>	V <sub>r</sub> = 10 V		62		pF

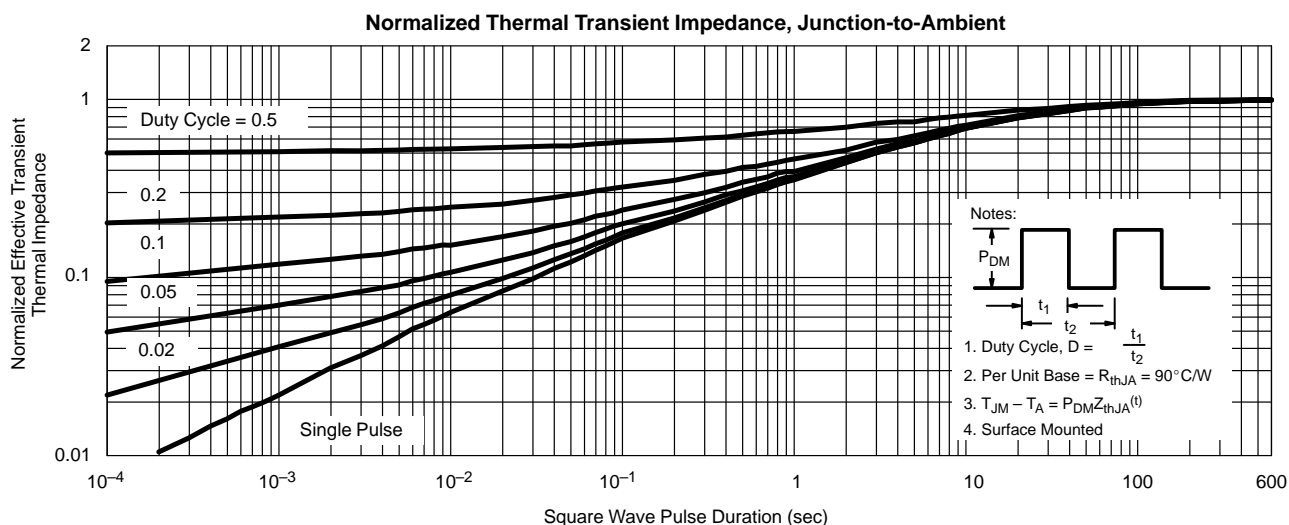
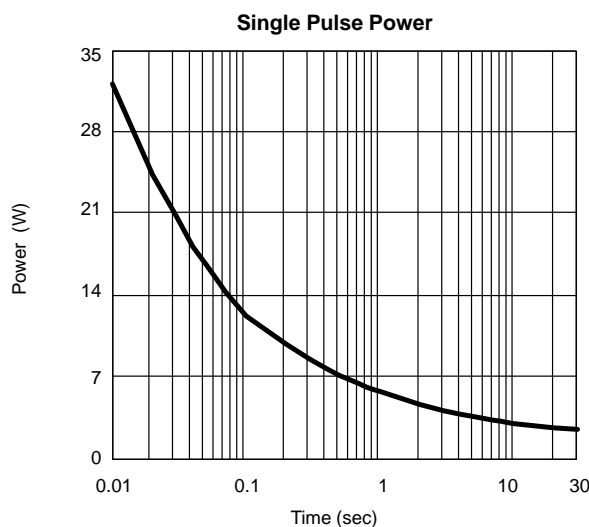
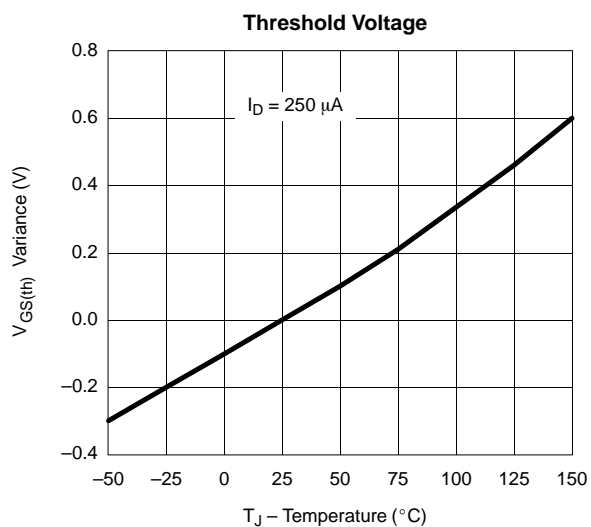
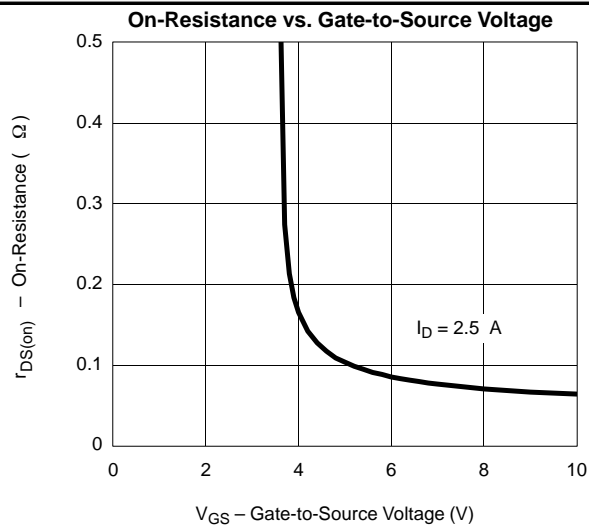
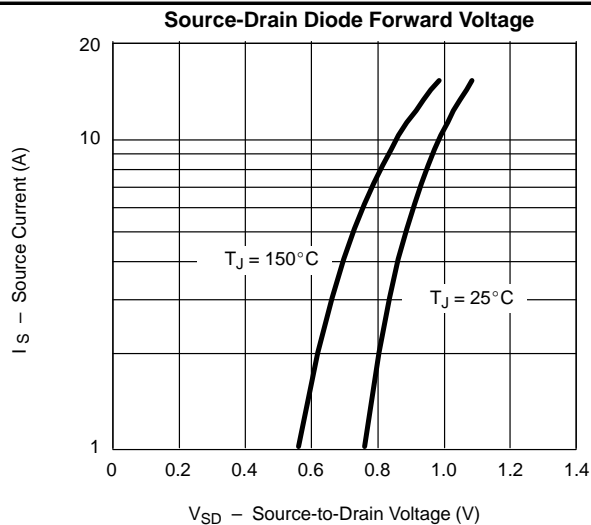


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) MOSFET**



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

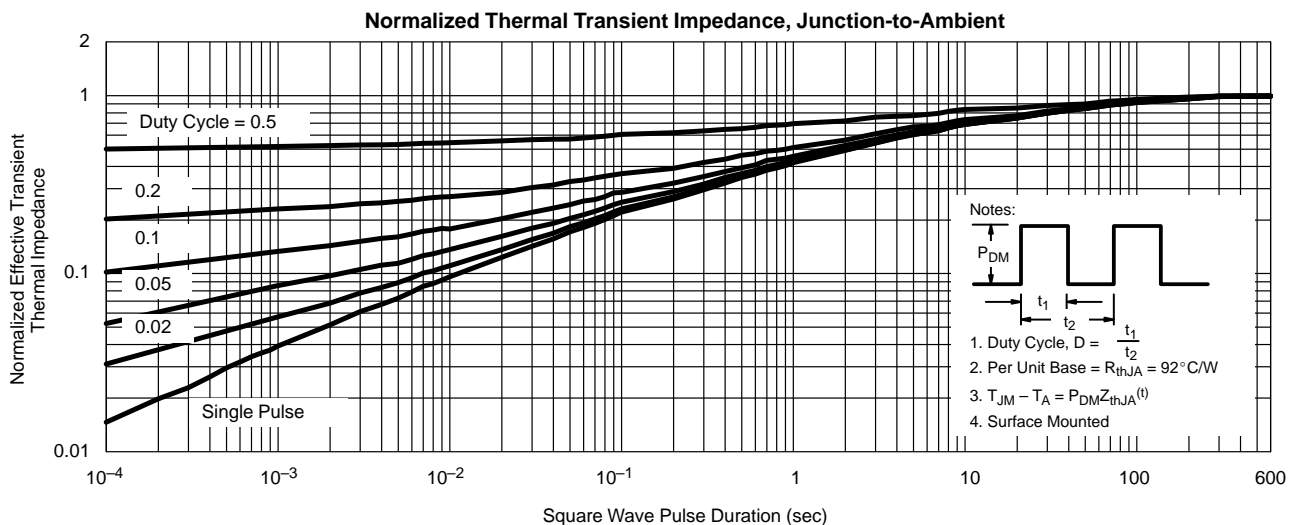
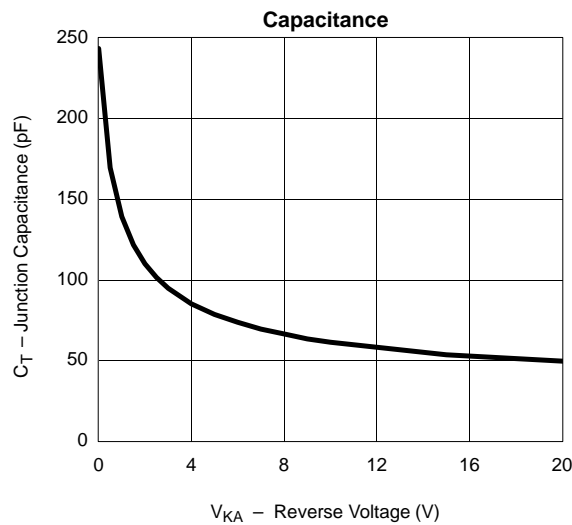
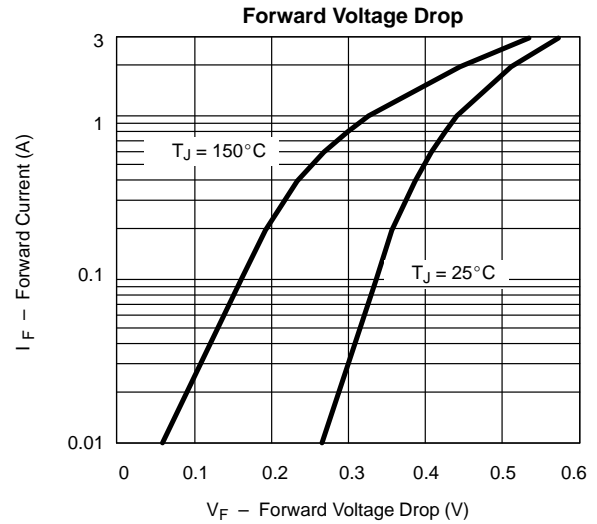
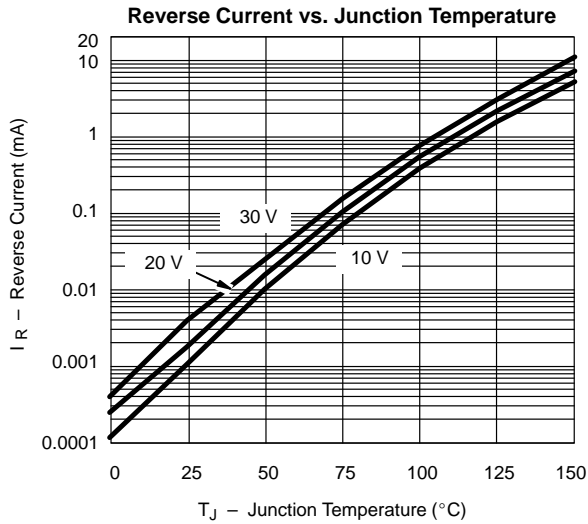
**MOSFET**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

**SCHOTTKY**





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