

# 2SA2039 / 2SC5706



## High Current Switching Applications

### Features

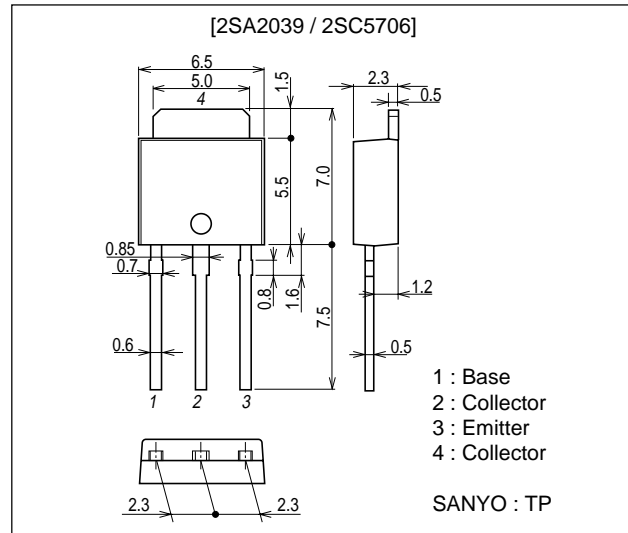
- DC-DC converter, relay drivers, lamp drivers, motor drivers, strobes.

### Features

- Adoption of FBET, MBIT process.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- High allowable power dissipation.

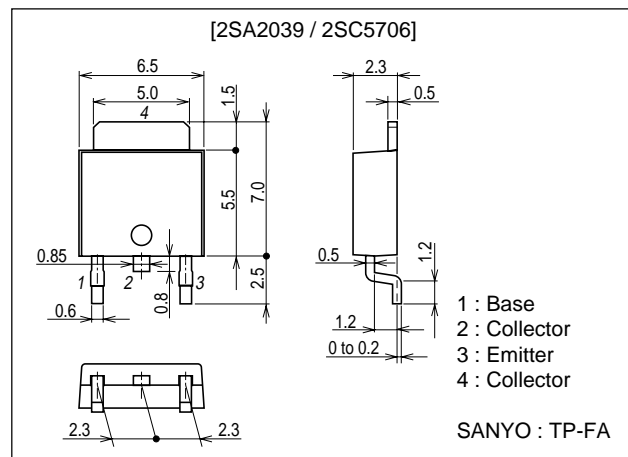
### Package Dimensions

unit : mm  
2045B



### Package Dimensions

unit : mm  
2044B



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## Specifications

Note\*( ) : 2SA2039

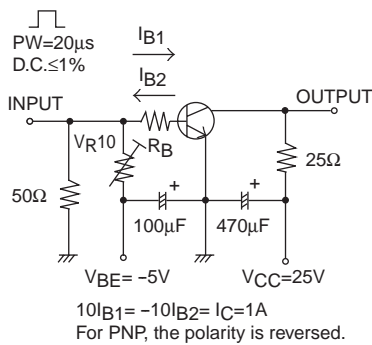
### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-50)80	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		(-50)80	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		(-)50	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		(-)6	V
Collector Current	I <sub>C</sub>		(-)5	A
Collector Current (Pulse)	I <sub>CP</sub>		(-)7.5	A
Base Current	I <sub>B</sub>		(-)1.2	A
Collector Dissipation	P <sub>C</sub>		0.8	W
		T <sub>c</sub> =25°C	15	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

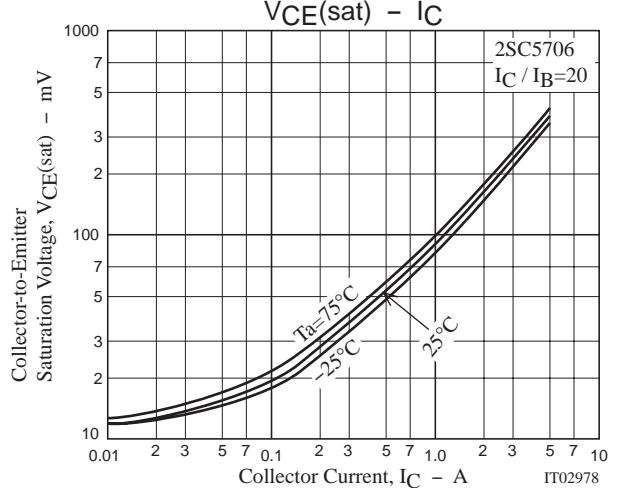
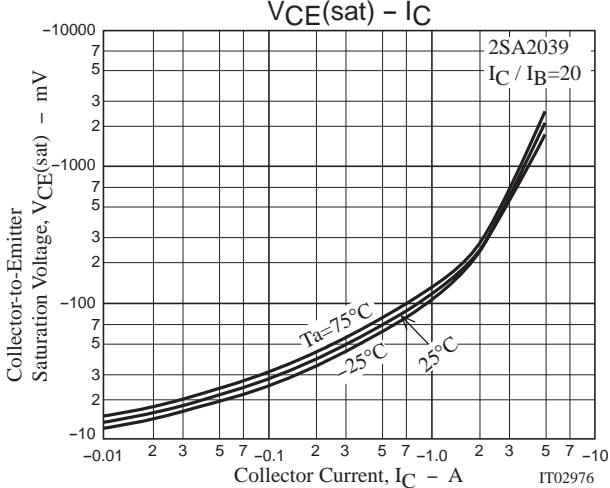
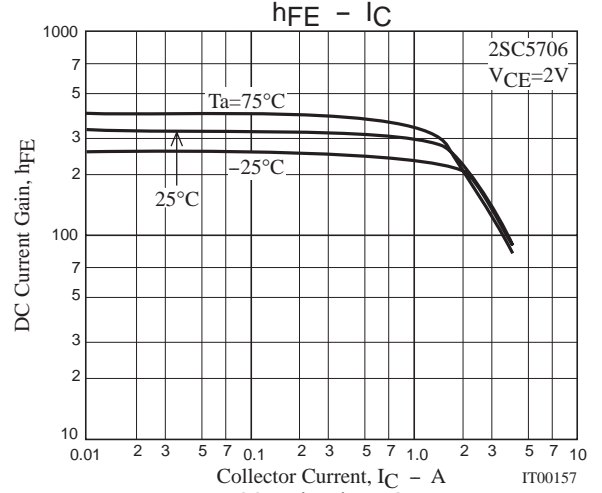
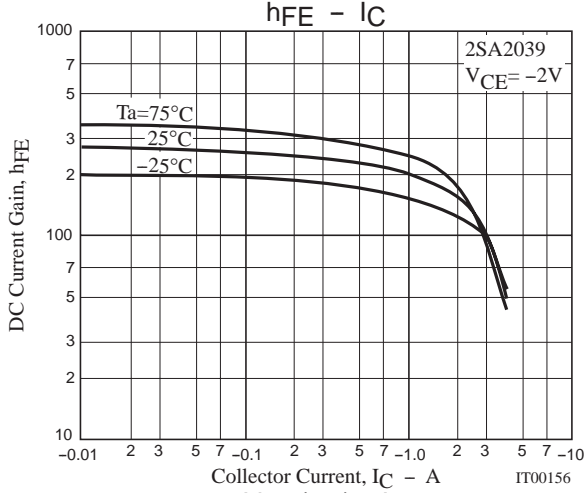
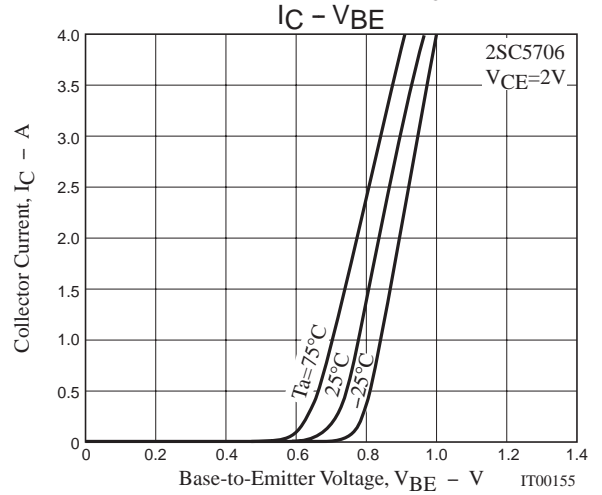
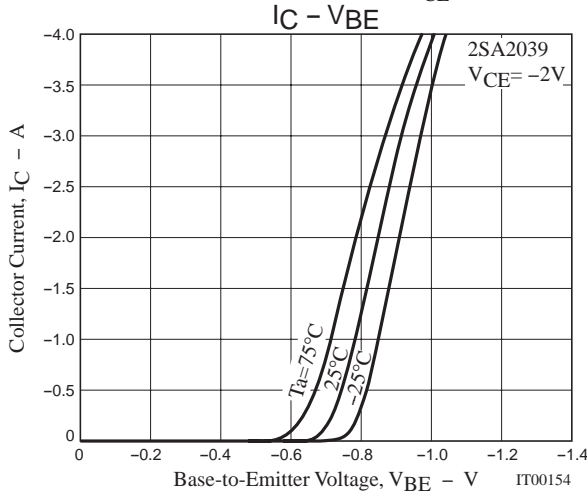
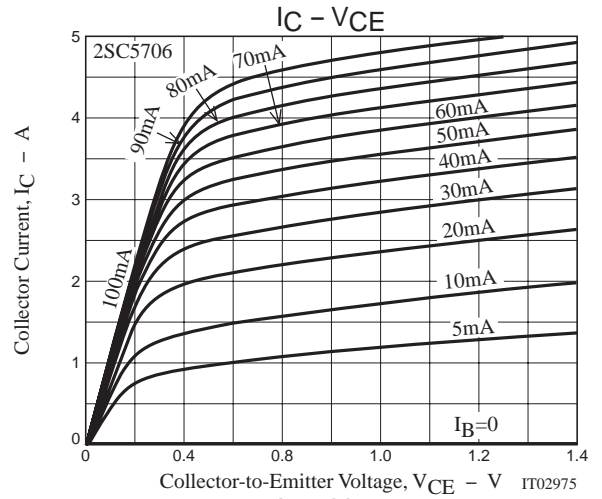
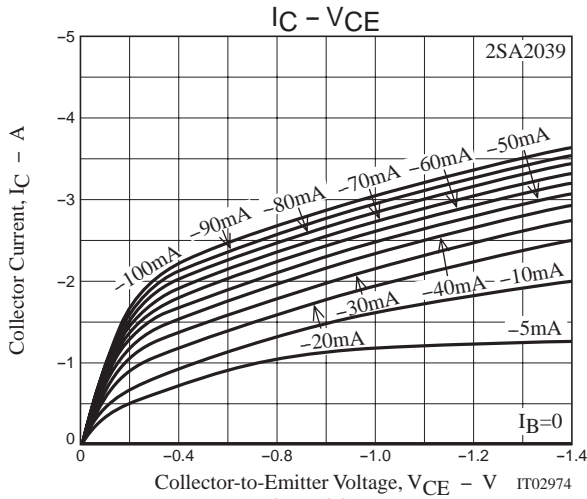
### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =(-)40V, I <sub>E</sub> =0			(-)1	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0			(-)1	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)500mA	200		560	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =(-)10V, I <sub>C</sub> =(-)500mA		(360)400		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =(-)10V, f=1MHz		(24)15		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =(-)1A, I <sub>B</sub> =(-)50mA		(-115)90	(-195)135	mV
		I <sub>C</sub> =(-)2A, I <sub>B</sub> =(-)100mA		(-255)160	(-430)240	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =(-)2A, I <sub>B</sub> =(-)100mA		(-)0.89	(-)1.2	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =(-)10μA, I <sub>E</sub> =0	(-50)80			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CES</sub>	I <sub>C</sub> =(-)100μA, R <sub>BE</sub> =0	(-50)80			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =(-)1mA, R <sub>BE</sub> =∞	(-)50			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =(-)10μA, I <sub>C</sub> =0	(-)6			V
Turn-On Time	t <sub>on</sub>	See specified test circuit.		(30)35		ns
Storage Time	t <sub>stg</sub>	See specified test circuit.		(230)300		ns
Fall Time	t <sub>f</sub>	See specified test circuit.		(15)20		ns

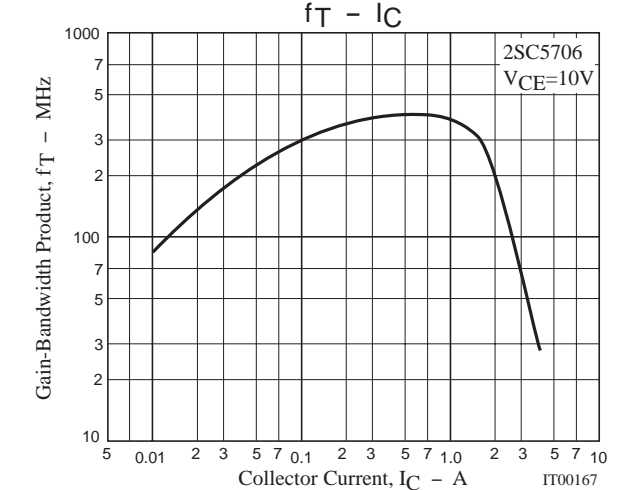
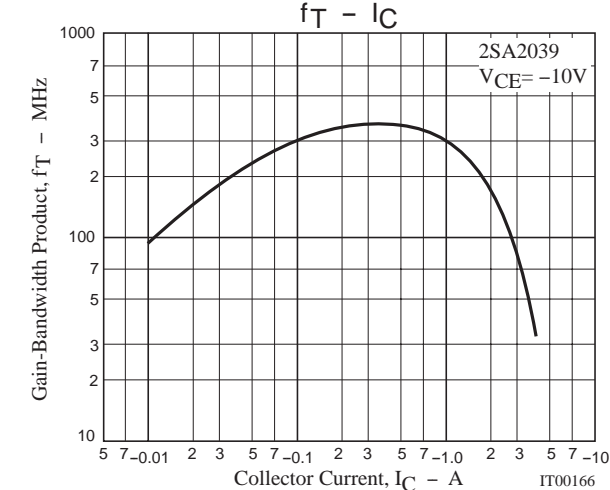
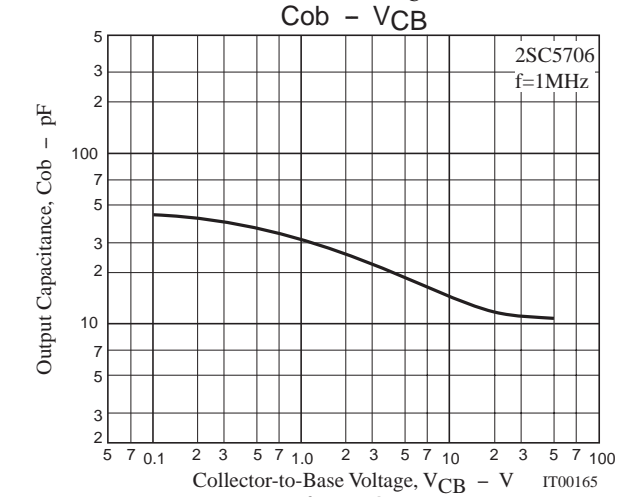
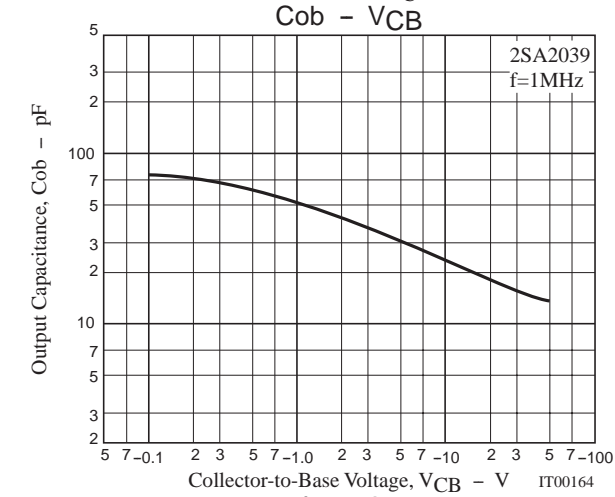
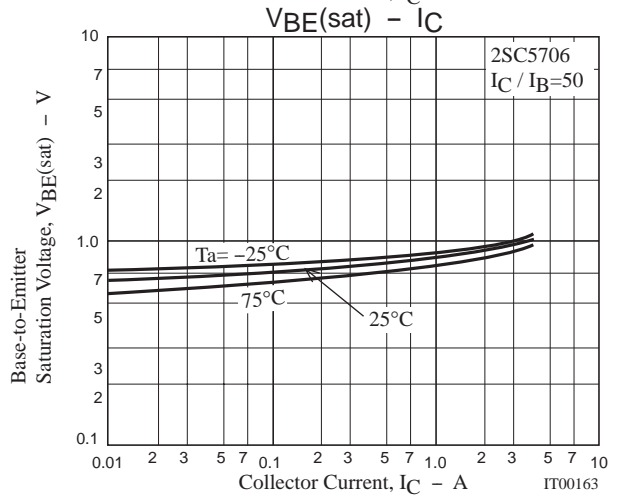
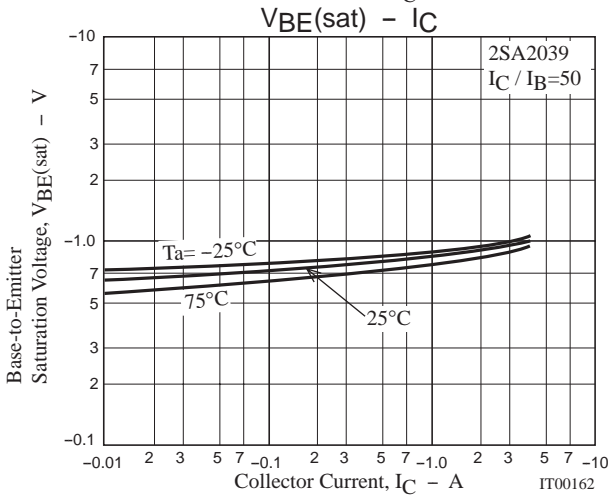
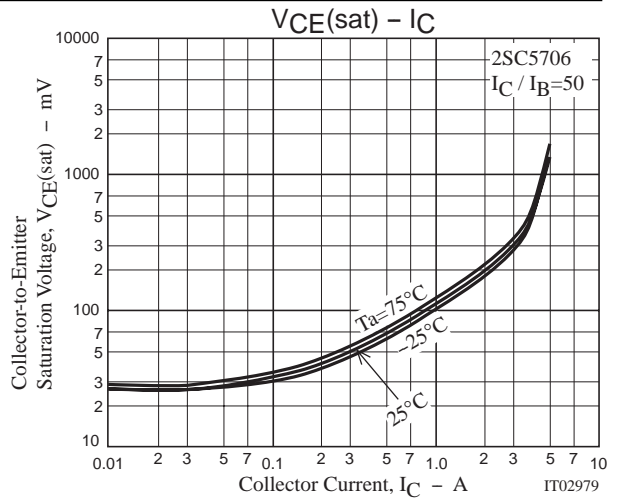
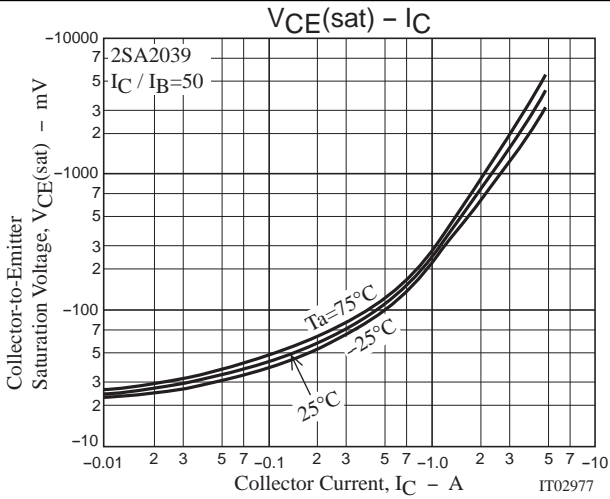
### Swicthing Time Test Circuit



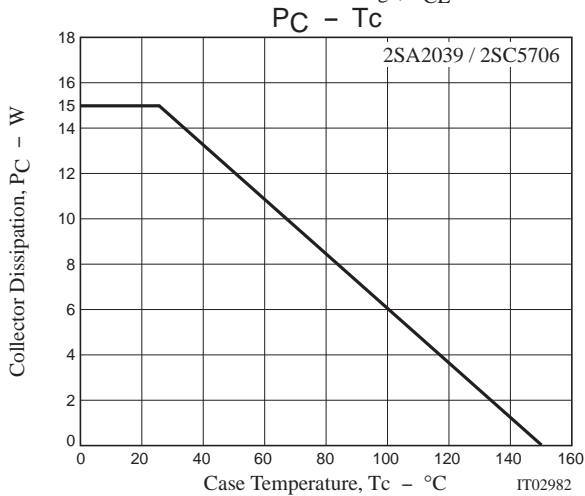
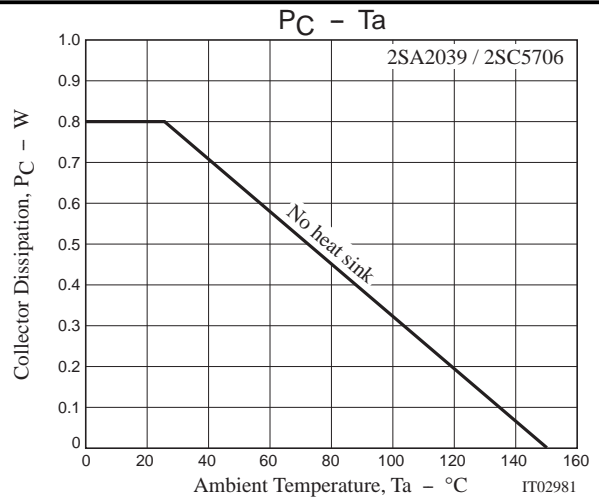
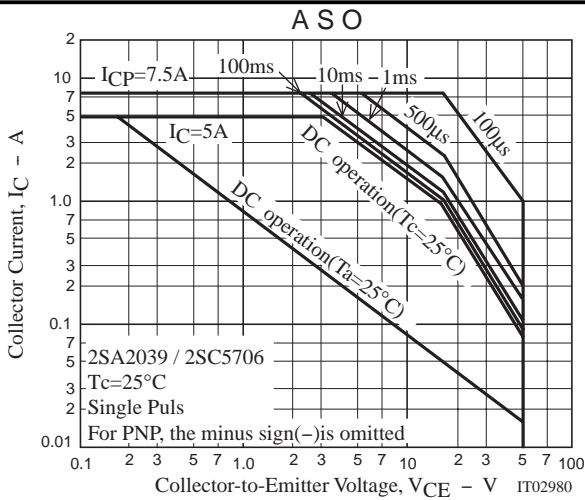
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