

MCAC10H03A-TP Datasheet

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DiGi Electronics Part Number	MCAC10H03A-TP-DG
Manufacturer	Micro Commercial Co
Manufacturer Product Number	MCAC10H03A-TP
Description	N-CHANNEL MOSFET
Detailed Description	N-Channel 30 V 100A (Tc) 49W Surface Mount DFN5060

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Purchase and inquiry

Manufacturer Product Number:

MCAC10H03A-TP

Series:

-

FET Type:

N-Channel

Drain to Source Voltage (Vdss):

30 V

Drive Voltage (Max Rds On, Min Rds On):

4.5V, 10V

Vgs(th) (Max) @ Id:

2.5V @ 250µA

Vgs (Max):

±20V

FET Feature:

-

Operating Temperature:

-55°C ~ 150°C (TJ)

Supplier Device Package:

DFN5060

Base Product Number:

MCAC10

Manufacturer:

Micro Commercial Co

Product Status:

Active

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

100A (Tc)

Rds On (Max) @ Id, Vgs:

3mOhm @ 20A, 10V

Gate Charge (Qg) (Max) @ Vgs:

85 nC @ 10 V

Input Capacitance (Ciss) (Max) @ Vds:

3865 pF @ 15 V

Power Dissipation (Max):

49W

Mounting Type:

Surface Mount

Package / Case:

8-PowerTDFN

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

Features

- Trench Power LV MOSFET Technology
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

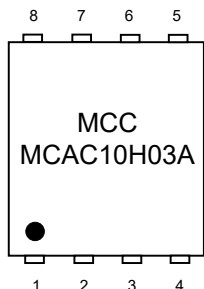
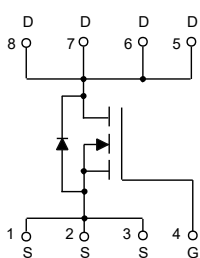
Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Therm Resistance: 50°C/W Junction to Ambient(Steady-state)(Note2)
- Thermal Resistance: 1.3°C/W Junction to Case(Steady-state)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_C=25^\circ C$	100
		$T_C=100^\circ C$	63
Pulsed Drain Current (Note3)	I_{DM}	400	A
Total Power Dissipation (Note4)	P_D	96	W
Avalanche Energy (Note5)	E_{AS}	243	mJ

- Note:
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$.
 3. Repetitive rating; pulse width limited by max. junction temperature.
 4. P_D is based on max. junction temperature, using junction-case thermal resistance.
 5. $T_J=25^\circ C, V_{DD}=20V, V_{GS}=10V, L=1.5mH$

Internal Structure and Marking Code



DFN5060

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.031	0.047	0.80	1.20	
B	0.010		0.254		TYP.
C	0.193	0.222	4.90	5.64	
D	0.232	0.250	5.90	6.35	
E	0.148	0.167	3.75	4.25	
F	0.126	0.154	3.20	3.92	
G	0.189	0.213	4.80	5.40	
H	0.222	0.239	5.65	6.06	
K	0.045	0.059	1.15	1.50	
J	0.012	0.020	0.30	0.50	
L	0.046	0.054	1.17	1.37	
M	0.012	0.028	0.30	0.71	
N	0.016	0.028	0.40	0.71	

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		2.5	3	m Ω
		$V_{GS}=4.5V, I_D=15A$		2.9	4	
Gate Resistance	R_g	F=1 MHz, Open drain		1.4		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				100	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$		0.85	1.2	V
Reverse Recovery Time	t_{rr}	$I_S=20A, di/dt=100A/\mu s$		32.5		ns
Reverse Recovery Charge	Q_{rr}			24.1		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		3620		pF
Output Capacitance	C_{oss}			588		
Reverse Transfer Capacitance	C_{rss}			528		
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V, I_D=20A$		76		nC
Gate-Source Charge	Q_{gs}			8.7		
Gate-Drain Charge	Q_{gd}			18.8		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=15V$ $I_D=20A, R_{GEN}=3\Omega$		11		ns
Turn-On Rise Time	t_r			24.7		
Turn-Off Delay Time	$t_{d(off)}$			51.2		
Turn-Off Fall Time	t_f			28.6		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

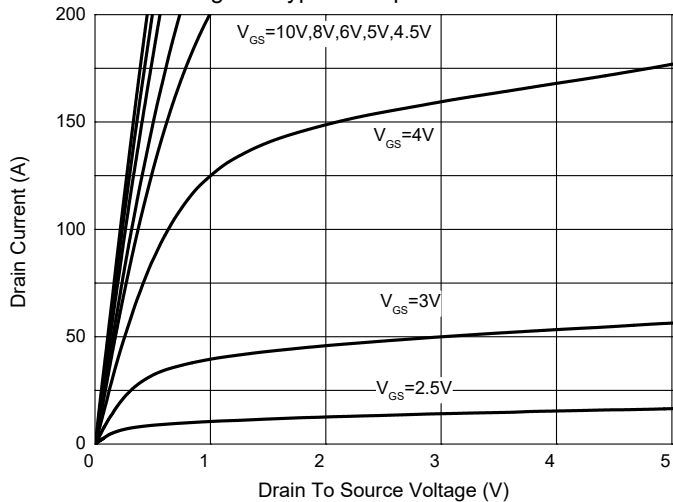


Fig. 2 - Transfer Characteristics

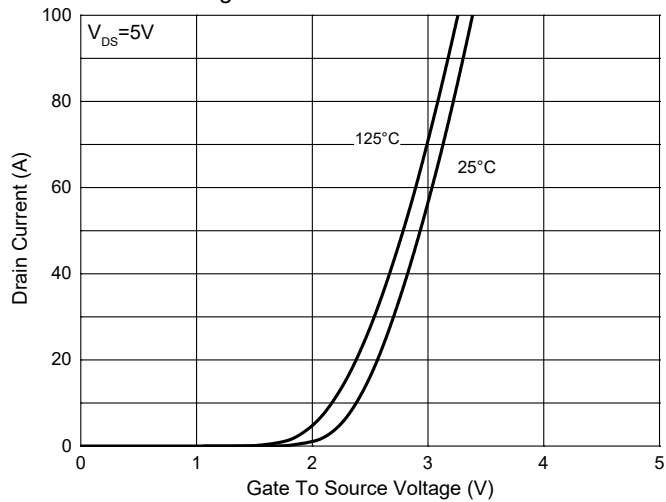


Fig. 3 - $R_{DS(ON)} - V_{GS}$

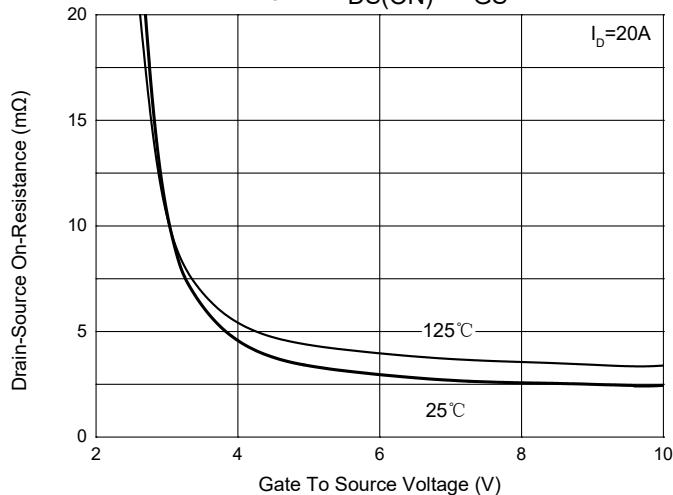


Fig. 4 - $R_{DS(ON)} - I_D$

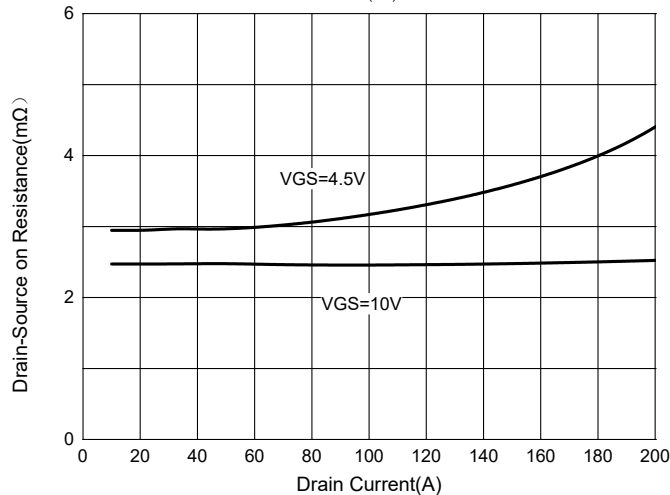


Fig. 5 - Capacitance Characteristics

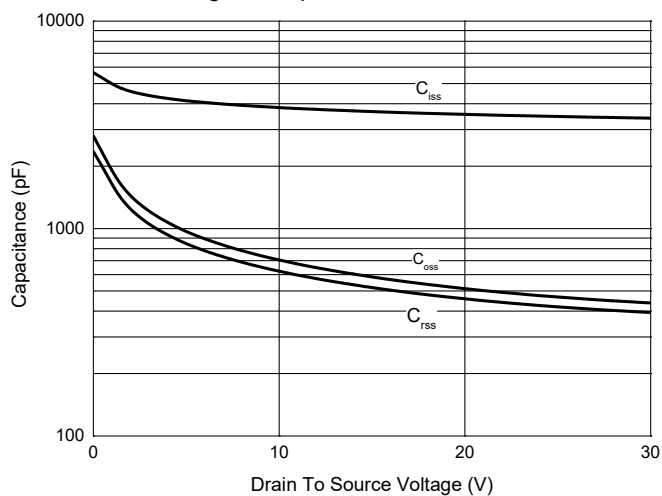
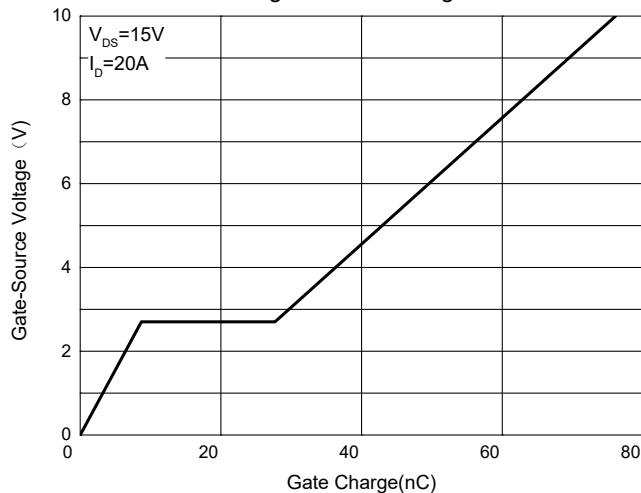


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

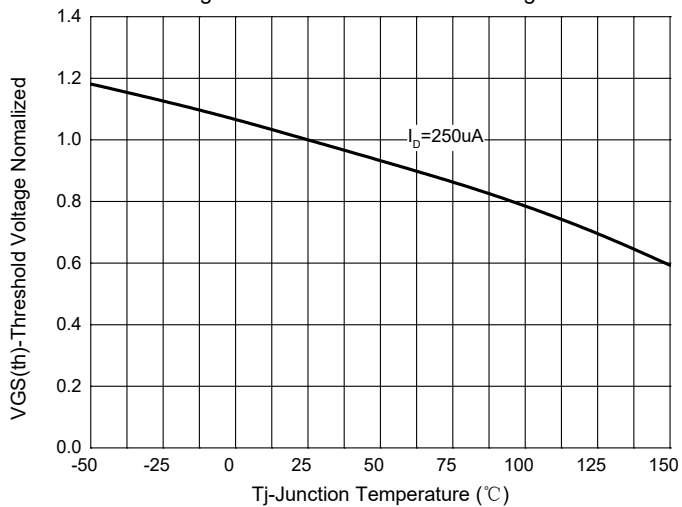


Fig.8-Normalized On Resistance Characteristics

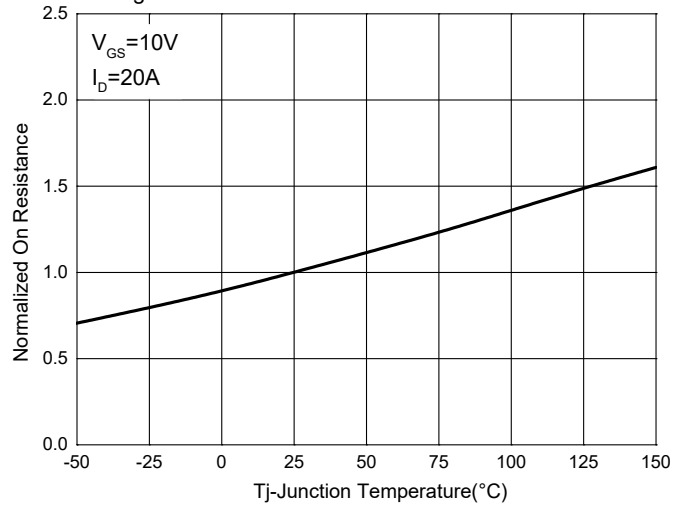


Fig.9 - I_S—V_{SD}

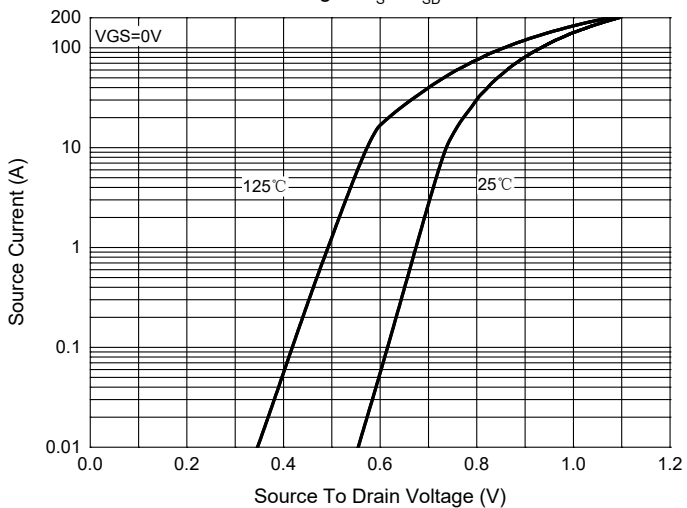


Fig. 10 - Drain Current

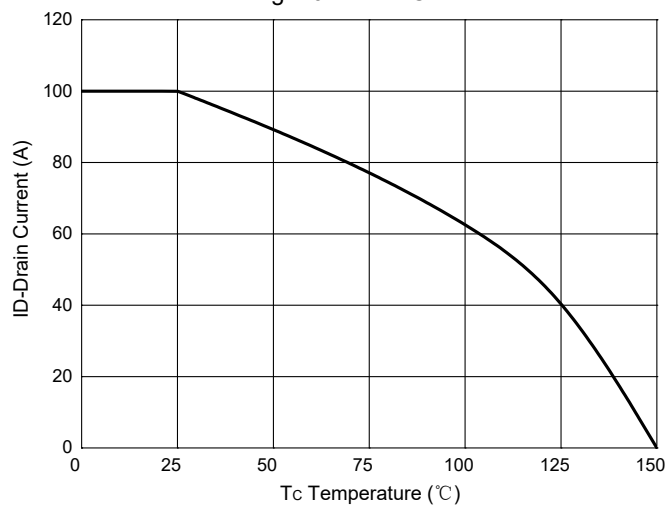
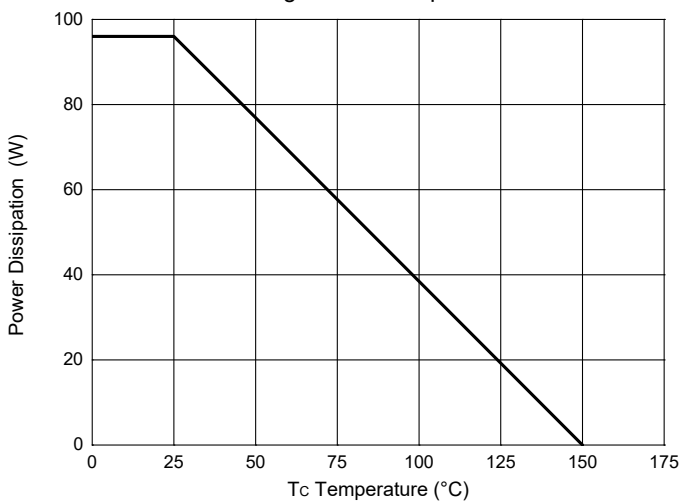


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

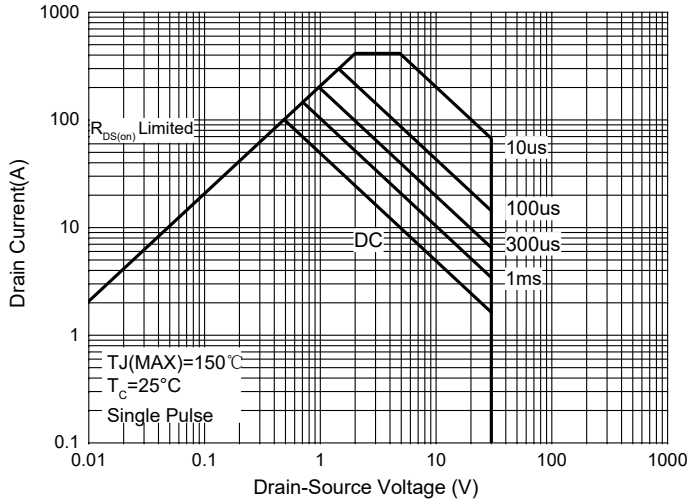
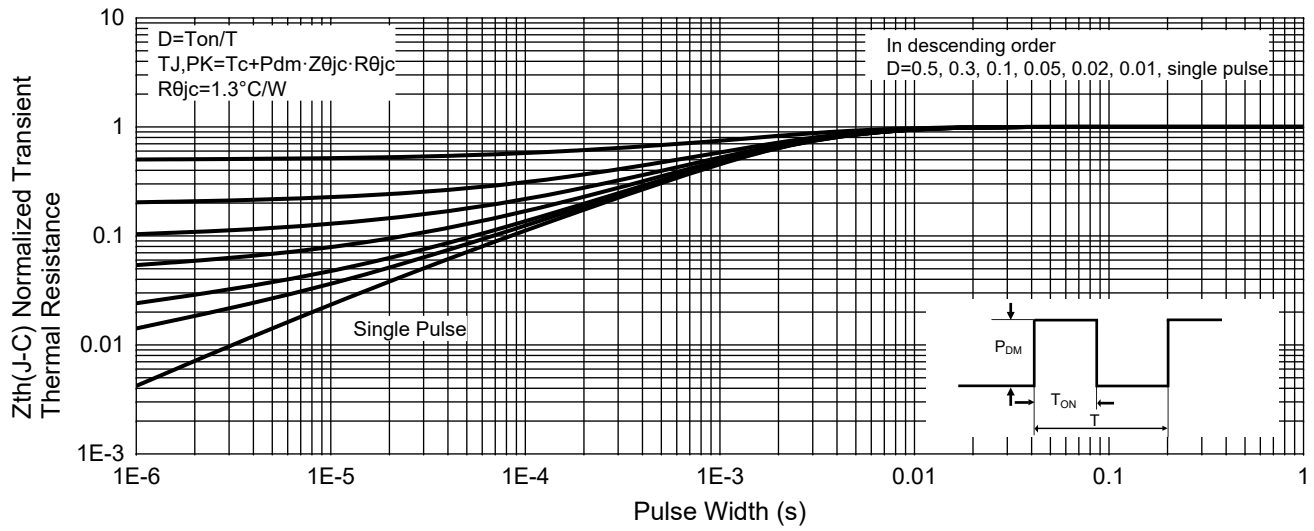


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 5Kpcs/Reel

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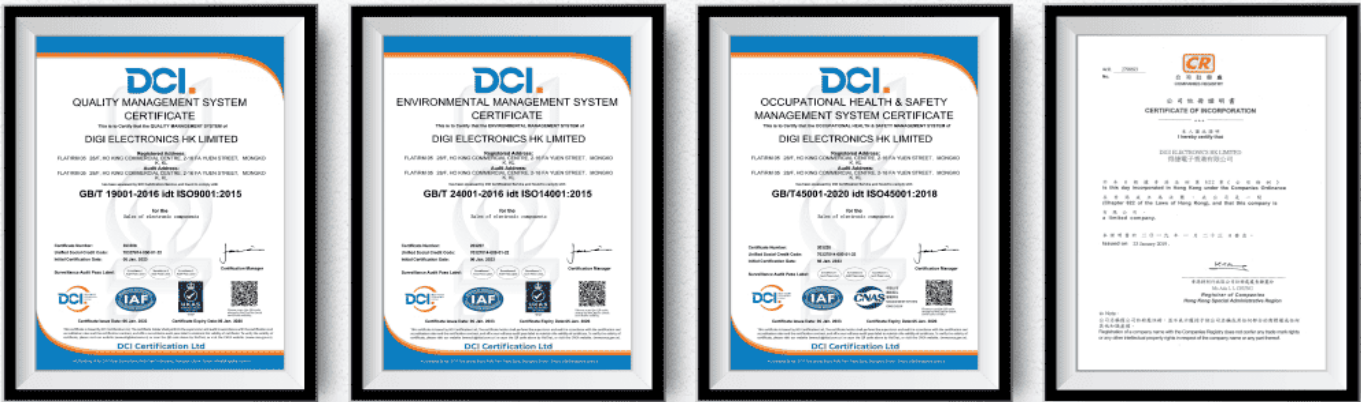
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