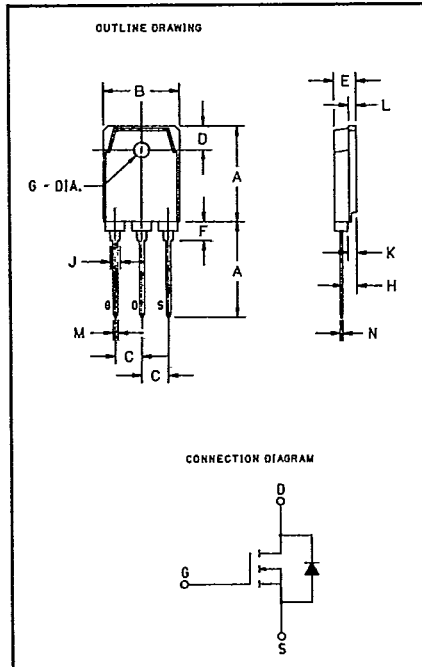


POWEREX**JS0190C0**
JS011KC0 **Tentative**

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

98 DE 7294621 0002719 3

Single EXMOS™
MOSFET**3 Amperes/900-1000 Volts**900-1000 Volts JS0190C0, JS011KC0
Outline Drawing

Dimension	Inches	Millimeters
A	.787	20
B	.614	15.6
C	.214 ± .008	5.45 ± 0.2
D	.197	5
E	.177	4.5
F	.157	4
G	.126 ± .008 Dia.	3.2 ± 0.2 Dia.
H	.110	2.8
J	.079	2
K	.071	1.8
L	.059	1.5
M	.039	1
N	.024	0.6

Description

Powerex Single EXMOS™ MOSFET Transistors are designed for use in applications requiring Hi-Frequency switching and low loss control.

Features:

- TO-3P Package
- Vertical DMOS Construction
- Low Drive Requirement
- No Second Breakdown

Applications:

- AC Motor Control
- UPS Inverters
- Switch Mode Power Supply
- PWM Regulator

Ordering Information

Select the complete eight digit module part number you desire from the table- i.e. JS011KC0 is a 1000 Volt, 3 Ampere Single EXMOS™ MOSFET.

Type	V _{DSS} Volts (900/1000)	Current Rating Amperes (3)
JS01	90 1K	C0



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JS0190C0
JS011KC0
Single EXMOS™ MOSFET
3 Amperes/900-1000 Volts

Maximum Ratings $T_c = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	JS0190C0/JS011KC0	Units
Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$
Drain Source Voltage, $I_D = 1\text{mA}$, $V_{GS} = 0\text{V}$	V_{DSS}	900/1000	Volts
Gate-Source Voltage	V_{GSS}	± 30	Volts
Continuous Drain Current	I_D	3	Amperes
Continuous Source Current	I_S	3	Amperes
Pulsed Drain Current Repetitive	I_{DM}	9	Amperes
Power Dissipation	P_T	120	Watts
Max. Mounting Torque, Mounting Screw (M3)	—	7	in.-lb.

Static Electrical Characteristics $T_c, T_J = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	JS0190C0			JS011KC0			Units
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = V_{DSS}, V_{GS} = 0\text{V}$	—	—	1	—	—	1	mA
Gate Source Leakage Current	$\pm I_{GSS}$	$V_{GS} = \pm 30\text{V}, V_{DS} = 0\text{V}$	—	—	0.1	—	—	0.1	μA
Gate Source Threshold Voltage	$V_{GS(th)}$	$I_D = 1\text{mA}, V_{DS} = 10\text{V}$	2	3	4	2	3	4	Volts
Drain Source On State Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 1.5\text{A}$	—	3.1	4.0	—	4.0	5.2	Ω
Drain Source On State Voltage	$V_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 1.5\text{A}$	—	4.7	6.0	—	6.0	7.8	Volts
Thermal Resistance, Junction to Case	$R_{\theta JC}$	—	—	—	1.0	—	—	1.0	$^\circ\text{C/W}$

Source Drain Diode Characteristics $T_c, T_J = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	JS0190C0/JS011KC0			Units
			Min.	Typ.	Max.	
Source-Drain Voltage	V_{SD}	$I_S = 1.5\text{A}, V_{GS} = 0\text{V}$	—	—	1.1	Volts
Reverse Recovery Time	t_{rr}	$I_S = 3\text{A}, dI_S/dt = -20\text{A}/\mu\text{s}, V_{GS} = 0\text{V}$	—	—	1700	ns

Dynamic Electrical Characteristics $T_c, T_J = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	JS0190C0/JS011KC0			Units
			Min.	Typ.	Max.	
Forward Transconductance	g_{fs}	$I_D = 1.5\text{A}, V_{DS} = 10\text{V}$	4	6	—	mhos
Input Capacitance	C_{iss}	—	—	950	—	pF
Output Capacitance	C_{oss}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$	—	100	—	pF
Reverse Transfer Capacitance	C_{rss}	—	—	55	—	pF
Turn On Time (Note 1)	t_{on}	$V_{DD} = 200\text{V}, I_D = 15\text{A}, V_{GS} = 10\text{V}$	—	70	150	ns
Turn Off Time (Note 1)	t_{off}	$R_{GEN} = R_{GS} = 50\Omega$	—	140	280	ns

Note 1: Turn on Time (t_{on}) = Turn on Delay ($t_{d(on)}$) + Rise Time (t_r)
Turn-off Time (t_{off}) = Turn Off Delay ($t_{d(off)}$) + Fall Time (t_f)

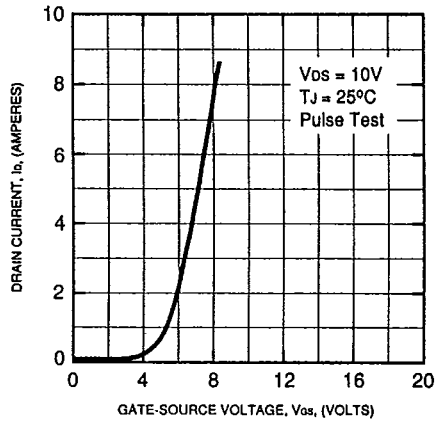


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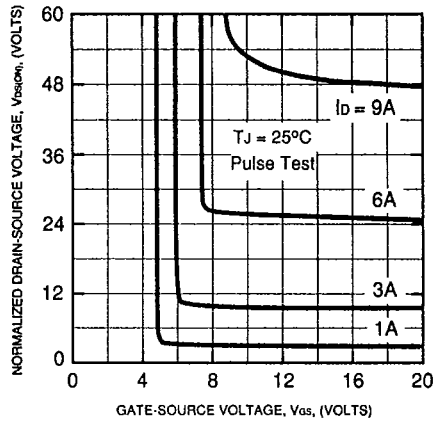
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JS0190C0
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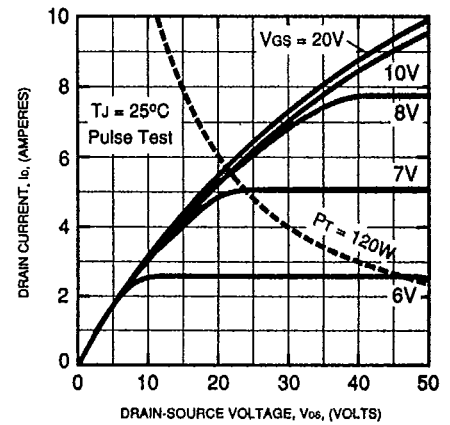
TRANSFER CHARACTERISTICS (TYPICAL) JS0190C0



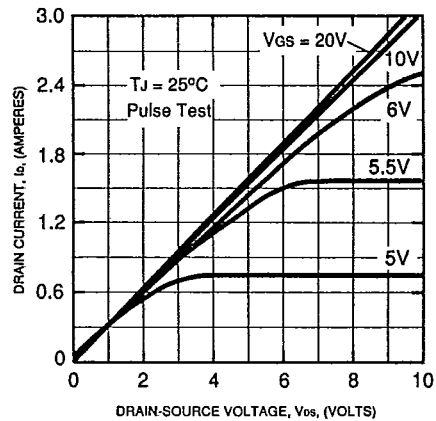
NORMALIZED DRAIN-SOURCE ON-STATE VOLTAGE (TYPICAL) JS0190C0



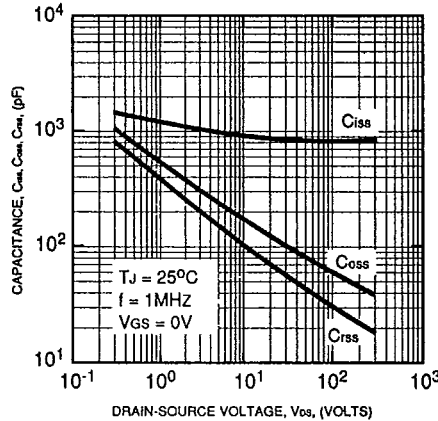
COMMON SOURCE OUTPUT CHARACTERISTICS (TYPICAL) JS0190C0



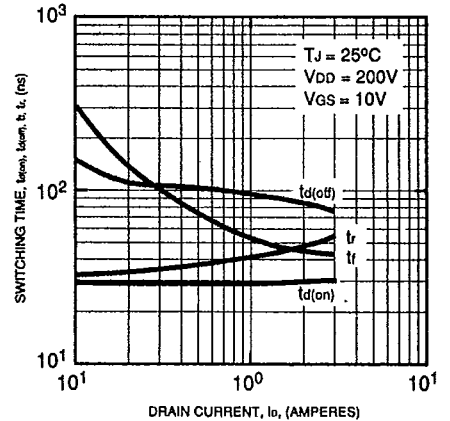
COMMON SOURCE OUTPUT CHARACTERISTICS (TYPICAL) JS0190C0



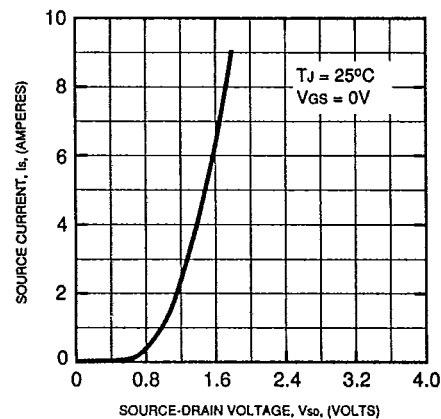
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL) JS0190C0



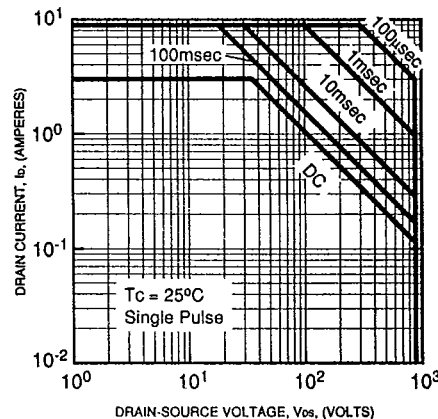
SWITCHING CHARACTERISTICS (TYPICAL) JS0190C0



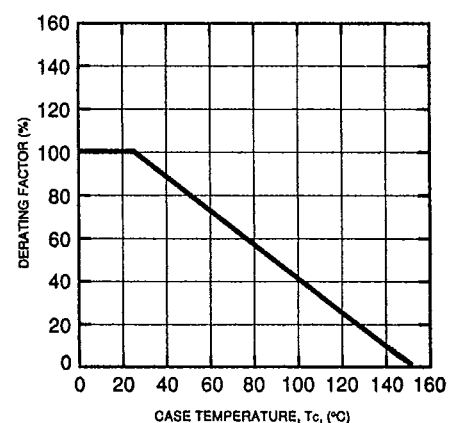
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL) JS0190C0



FORWARD BIAS SAFE OPERATING AREA (S.O.A.) JS0190C0



TEMPERATURE DERATING FACTOR OF SAFE OPERATING AREA (S.O.A.) JS0190C0

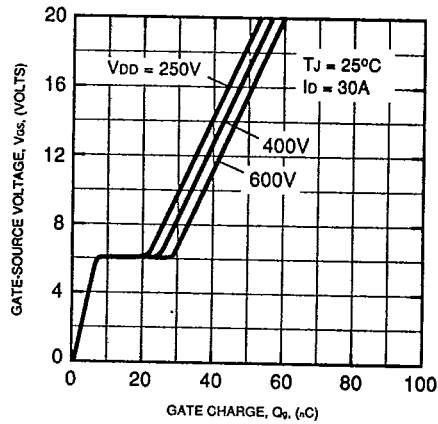




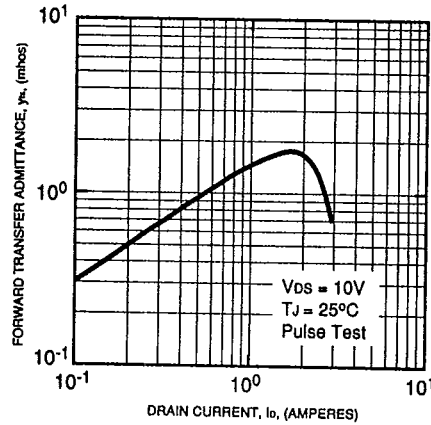
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JS0190C0
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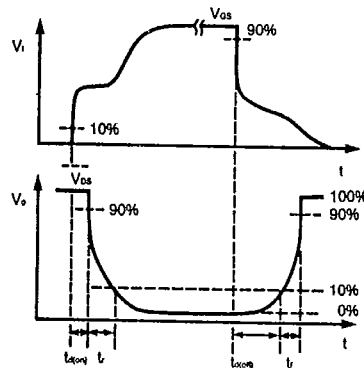
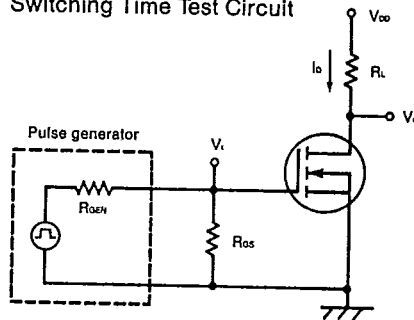
GATE CHARGE VS. V_{GS}
 (TYPICAL)
 JS0190C0



FORWARD TRANSFER ADMITTANCE VS.
 DRAIN CURRENT (TYPICAL)
 JS0190C0



Switching Time Test Circuit



Notice: MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling should be observed.

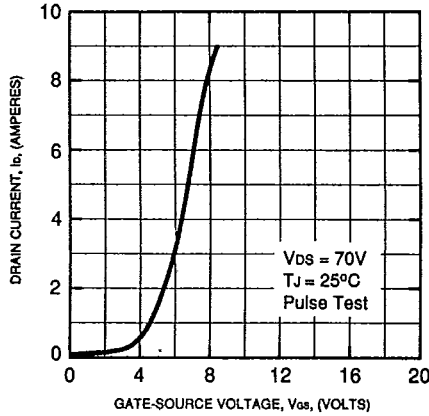


Tentative

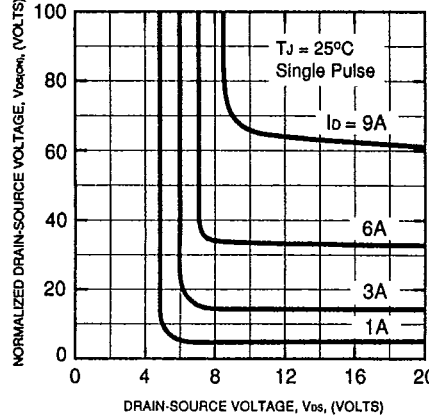
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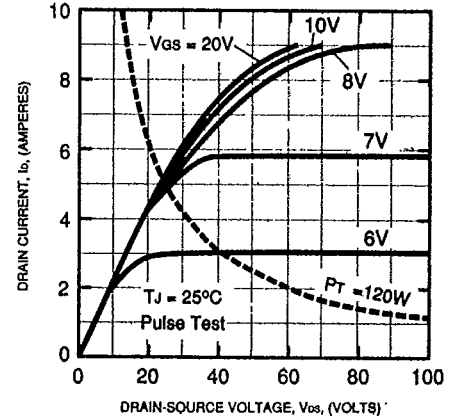
TRANSFER CHARACTERISTICS
 (TYPICAL)
 JS011KC0



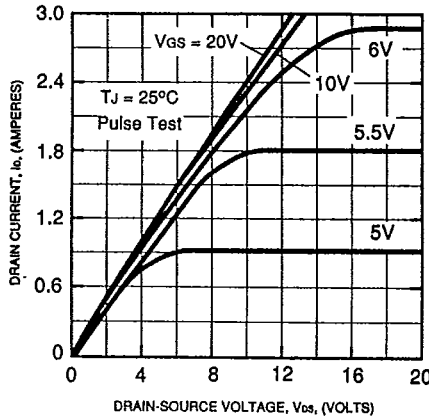
NORMALIZED DRAIN-SOURCE
 ON-STATE VOLTAGE (TYPICAL)
 JS011KC0



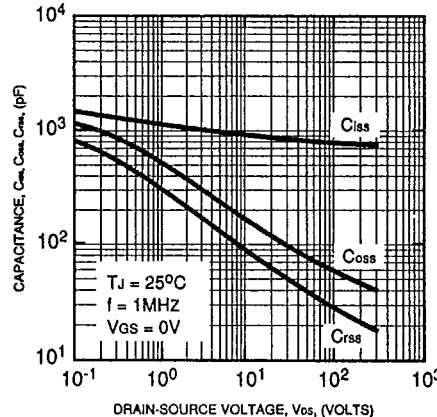
COMMON SOURCE OUTPUT
 CHARACTERISTICS (TYPICAL)
 JS011KC0



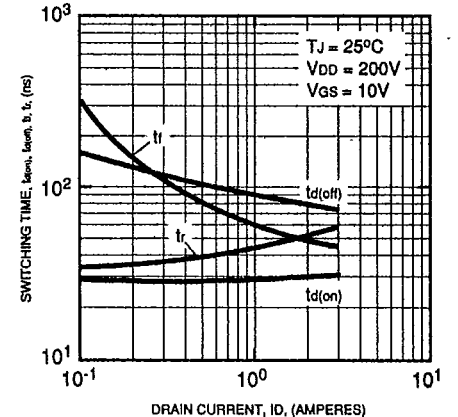
COMMON SOURCE OUTPUT
 CHARACTERISTICS (TYPICAL)
 JS011KC0



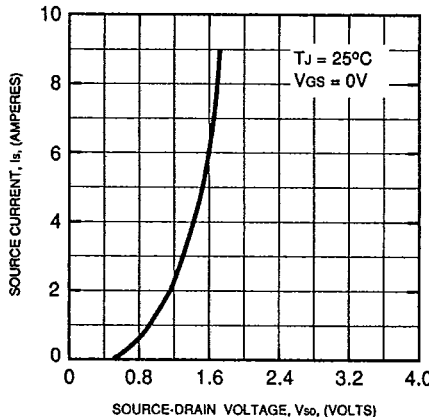
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE
 (TYPICAL)
 JS011KC0



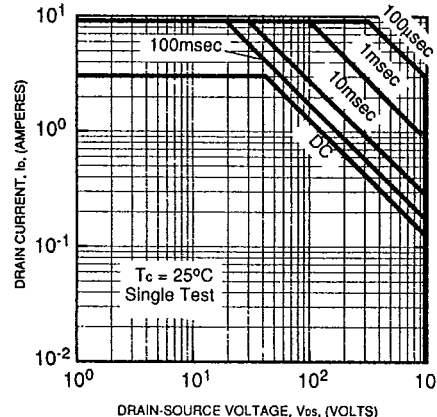
SWITCHING CHARACTERISTICS
 (TYPICAL)
 JS011KC0



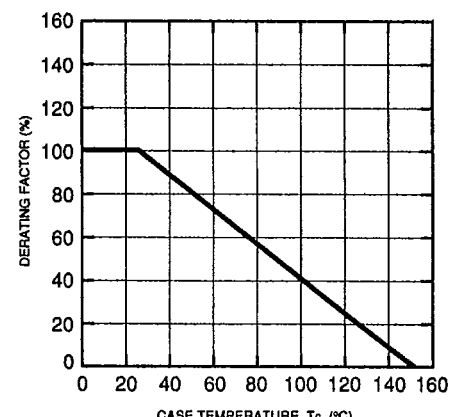
SOURCE-DRAIN DIODE
 FORWARD CHARACTERISTICS (TYPICAL)
 JS011KC0



FORWARD BIAS SAFE OPERATING AREA
 (S.O.A.)
 JS011KC0



TEMPERATURE DERATING FACTOR
 OF SAFE OPERATING AREA (S.O.A.)
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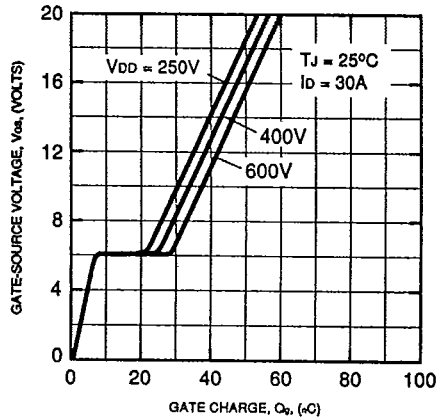




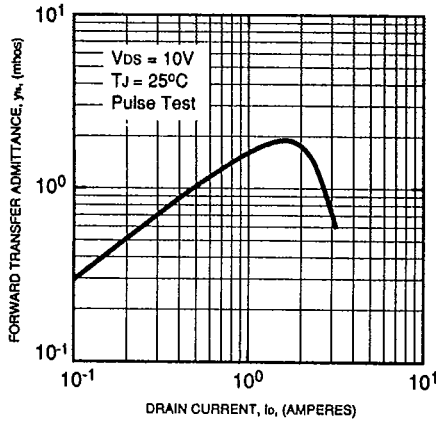
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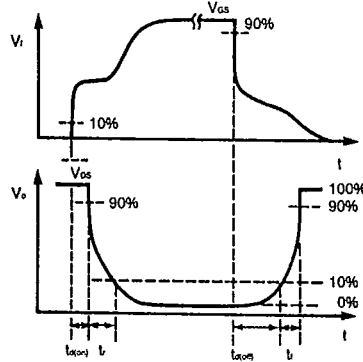
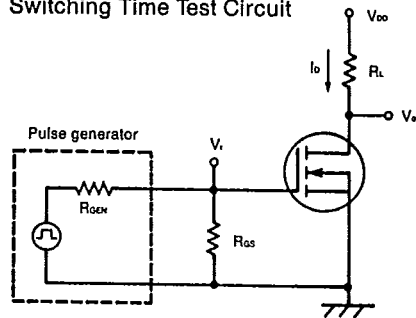
GATE CHARGE VS. V_{gs}
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FORWARD TRANSFER ADMITTANCE VS.
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