

P-CHANNEL MOS FET
FOR HIGH SWITCHING

The 2SJ355 is a P-channel MOS FET of a vertical type and is a switching element that can be directly driven by the output of an IC operating at 5 V.

This product has a low ON resistance and superb switching characteristics and is ideal for driving the actuators and DC/DC converters.

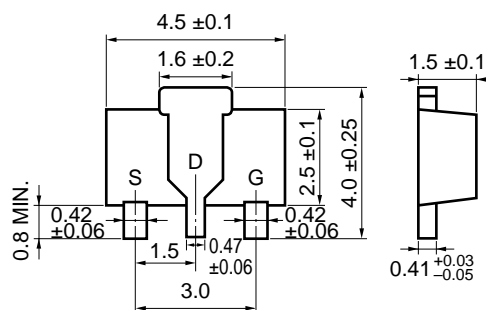
FEATURES

- Can be directly driven by 5-V IC
- Low ON resistance

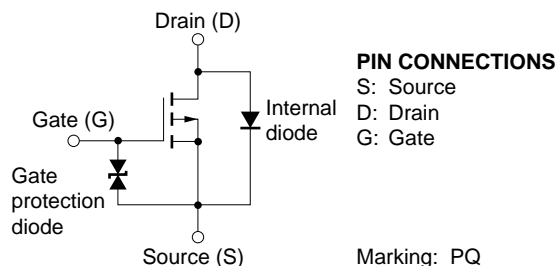
$R_{DS(on)} = 0.60 \Omega$ MAX. @ $V_{GS} = -4 V$, $I_D = -1.0 A$

$R_{DS(on)} = 0.35 \Omega$ MAX. @ $V_{GS} = -10 V$, $I_D = -1.0 A$

PACKAGE DIMENSIONS (in mm)



EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS ($T_A = 25 \text{ }^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	RATING	UNIT
Drain to Source Voltage	V_{DSS}	$V_{GS} = 0$	-30	V
Gate to Source Voltage	V_{GSS}	$V_{DS} = 0$	-20/+10	V
Drain Current (DC)	$I_{D(DC)}$		± 2.0	A
Drain Current (Pulse)	$I_{D(pulse)}$	$PW \leq 10 \text{ ms}$ Duty cycle $\leq 1 \%$	± 4.0	A
Total Power Dissipation	P_T	16 cm ² × 0.7 mm, ceramic substrate used	2.0	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

The internal diode connected between the gate and source of this product is to protect the product from static electricity. If the product is used in a circuit where the rated voltage of the product may be exceeded, connect a protection circuit.

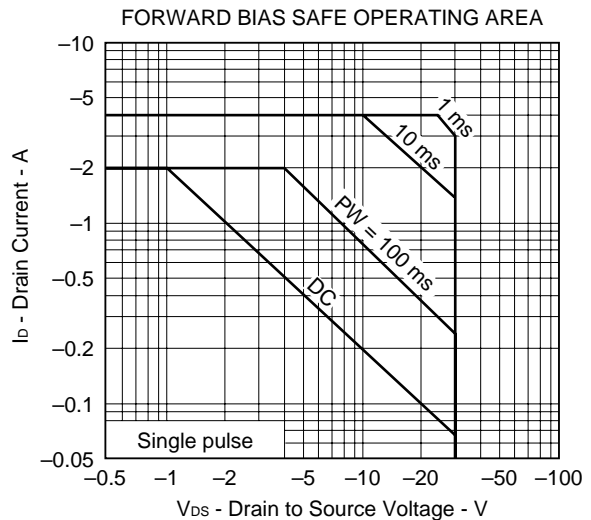
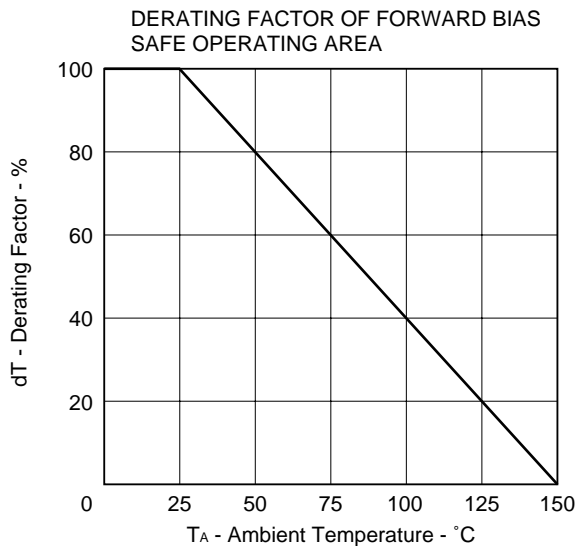
Take adequate preventive measures against static electricity when handling this product.

The information in this document is subject to change without notice.

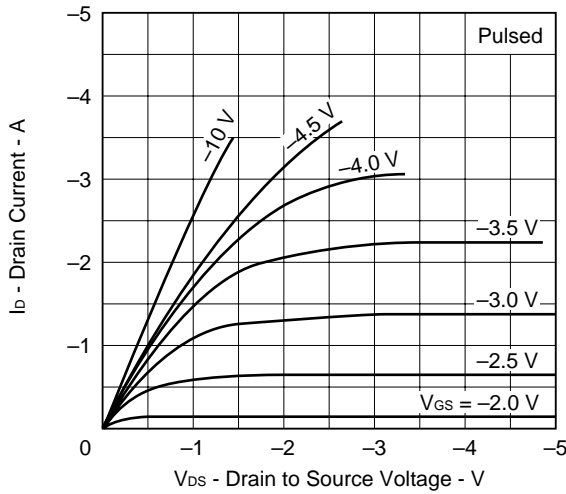
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-Off Current	I _{DSS}	V _{DS} = -30 V, V _{GS} = 0			-10	μA
Gate Leakage Current	I _{GSS}	V _{GS} = -16/+10 V, V _{DS} = 0			±10	μA
Gate Cut-Off Voltage	V _{GS(off)}	V _{DS} = -10 V, I _D = -1 mA	-1.0	-1.5	-2.0	V
Forward Transfer Admittance	y _{fs}	V _{DS} = -10 V, I _D = -1.0 A	1.0			S
Drain to Source On-State Resistance	R _{DS(on)1}	V _{GS} = -4 V, I _D = -1.0 A		0.50	0.60	Ω
Drain to Source On-State Resistance	R _{DS(on)2}	V _{GS} = -10 V, I _D = -1.0 A		0.26	0.35	Ω
Input Capacitance	C _{iss}	V _{DS} = -10 V, V _{GS} = 0, f = 1.0 MHz		300		pF
Output Capacitance	C _{oss}			245		pF
Reverse Transfer Capacitance	C _{rss}			120		pF
Turn-On Delay Time	t _{d(on)}	V _{DD} = -25 V, I _D = -1.0 A V _{GS(on)} = -10 V R _G = 10 Ω, R _L = 25 Ω		5.5		ns
Rise Time	t _r			32		ns
Turn-Off Delay Time	t _{d(off)}			110		ns
Fall Time	t _f			130		ns
Gate Input Charge	Q _G	V _{DS} = -24 V, V _{GS} = -10 V, I _D = -1.8 A, I _G = -2 mA		12.2		nC
Gate to Source Charge	Q _{GS}			1.2		nC
Gate to Drain Charge	Q _{GD}			4.6		nC
Internal Diode Reverse Recovery Time	t _{rr}	I _F = 2.0 A, di/dt = 50 A/μs		95		ns
Internal Diode Reverse Recovery Charge	Q _{rr}			85		nC

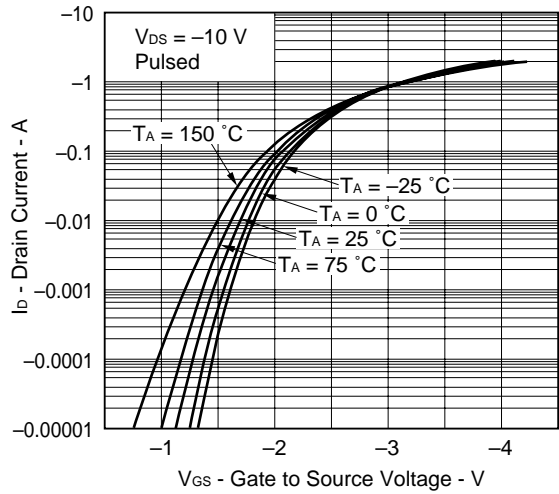
TYPICAL CHARACTERISTICS (T_A = 25 °C)



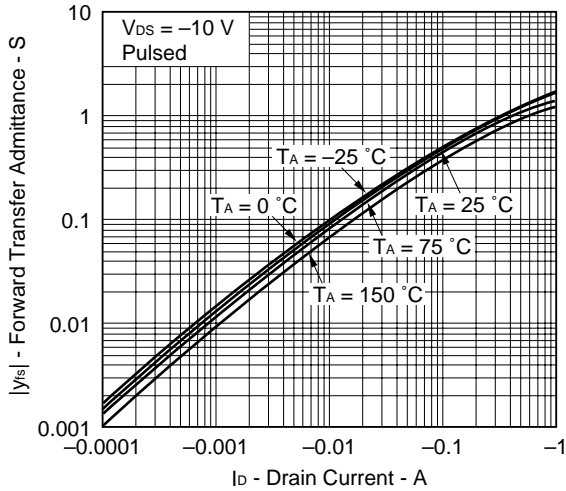
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



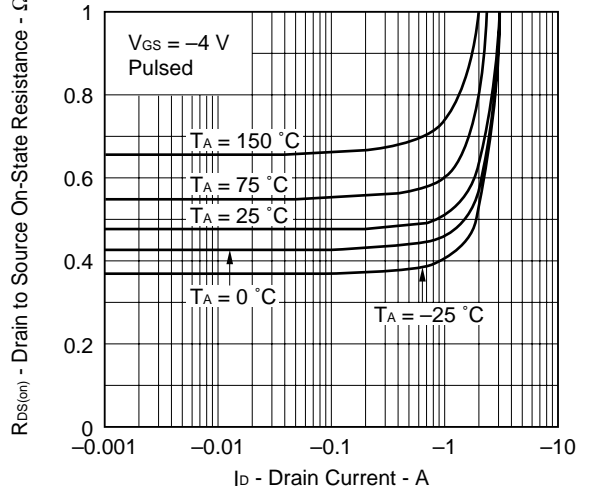
TRANSFER CHARACTERISTICS



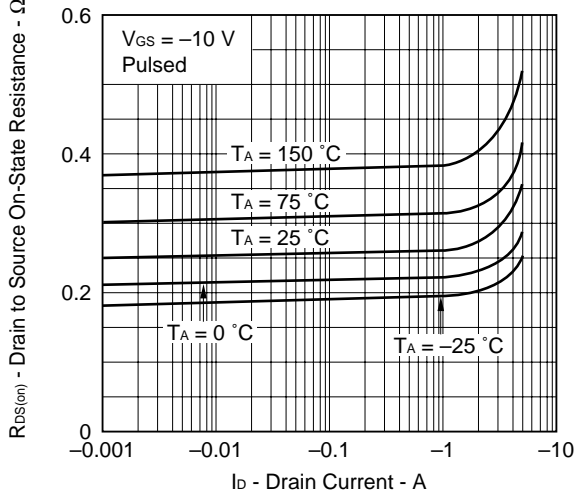
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



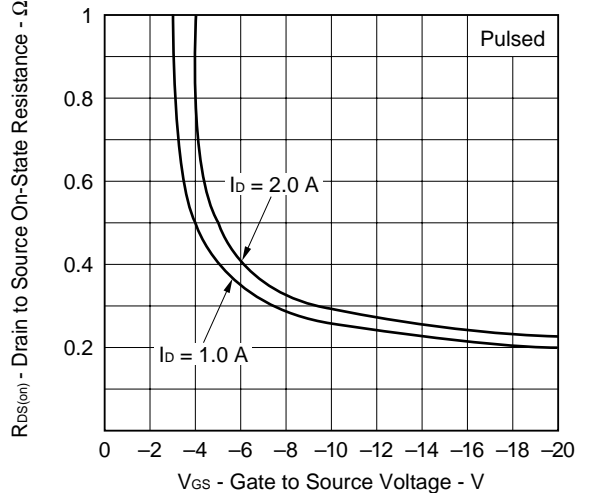
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



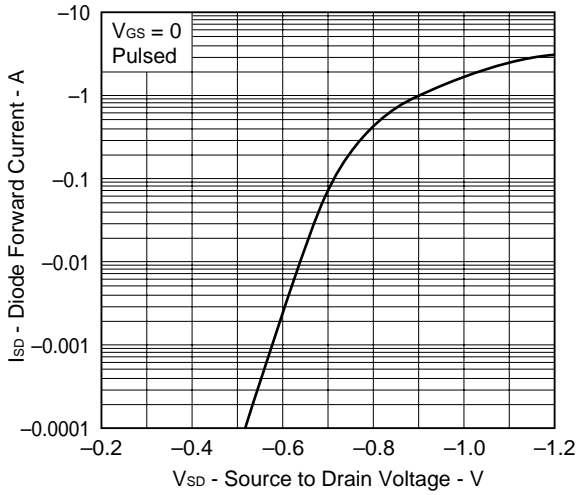
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



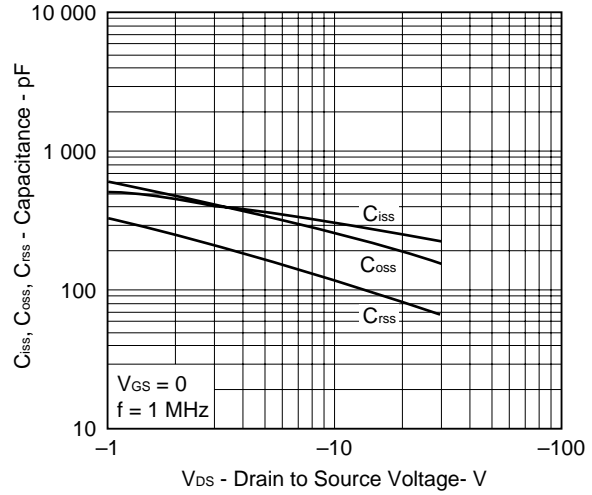
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



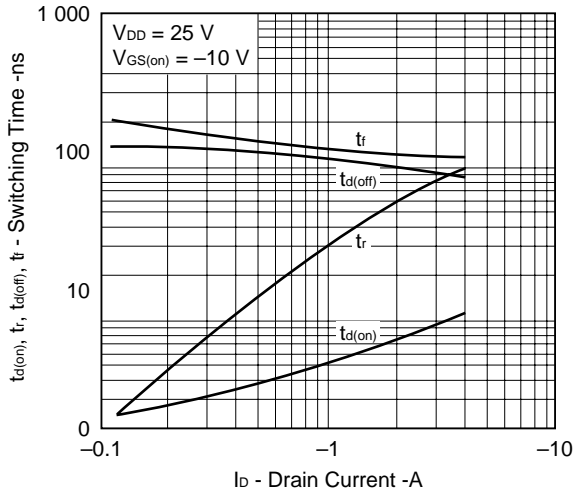
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



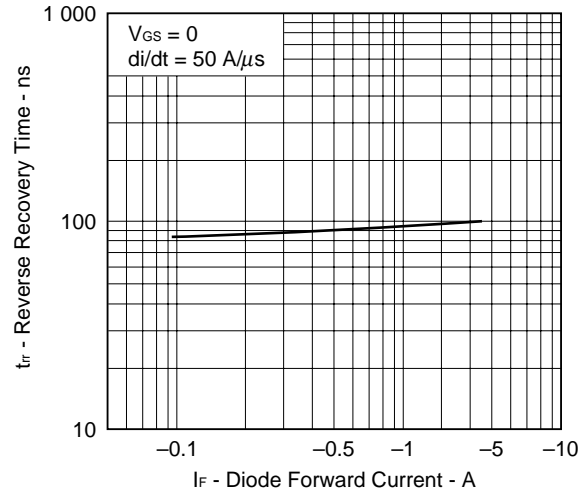
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



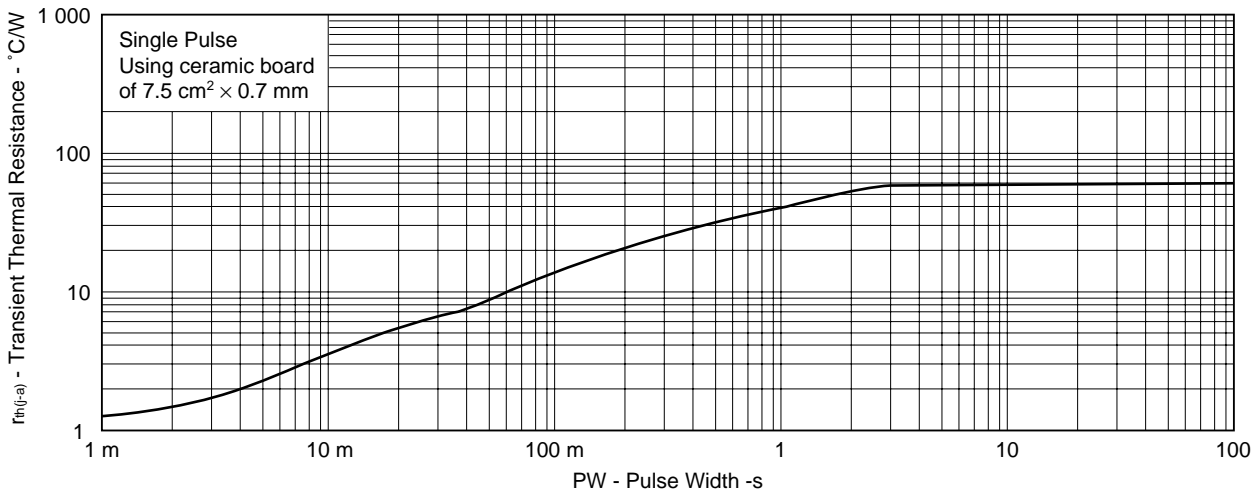
SWITCHING CHARACTERISTICS



REVERSE RECOVERY TIME vs. DIODE FORWARD CURRENT



TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	TEI-1202
Quality grade on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

[MEMO]

No part of this document may be copied or reproduced in any form or by any means without the prior written consent of NEC Corporation. NEC Corporation assumes no responsibility for any errors which may appear in this document.

NEC Corporation does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from use of a device described herein or any other liability arising from use of such device. No license, either express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of NEC Corporation or others.

While NEC Corporation has been making continuous effort to enhance the reliability of its semiconductor devices, the possibility of defects cannot be eliminated entirely. To minimize risks of damage or injury to persons or property arising from a defect in an NEC semiconductor device, customer must incorporate sufficient safety measures in its design, such as redundancy, fire-containment, and anti-failure features.

NEC devices are classified into the following three quality grades:

“Standard”, “Special”, and “Specific”. The Specific quality grade applies only to devices developed based on a customer designated “quality assurance program” for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.

Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

The quality grade of NEC devices in “Standard” unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact NEC Sales Representative in advance.

Anti-radioactive design is not implemented in this product.