

P-CHANNEL SIGNAL MOS FET FOR SWITCHING

The 2SJ411 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 power control switches and DC/DC converters.

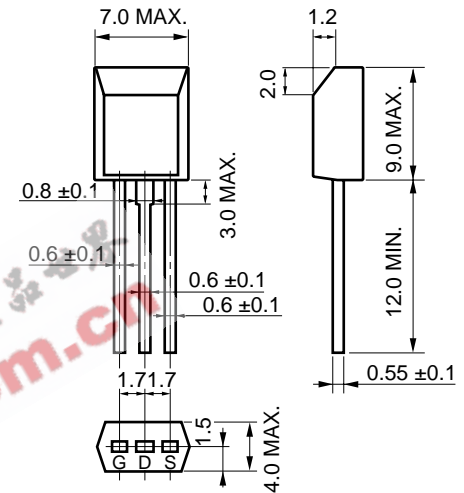
FEATURES

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

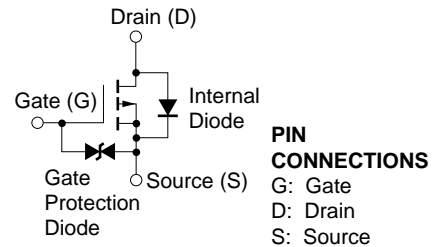
$$R_{DS(on)} = 0.24 \Omega \text{ MAX. @ } V_{GS} = -4 \text{ V, } I_D = -2.5 \text{ A}$$

$$R_{DS(on)} = 0.11 \Omega \text{ MAX. @ } V_{GS} = -10 \text{ V, } I_D = -2.5 \text{ A}$$

PACKAGE DIMENSIONS (in mm)



EQUIVALENT CIRCUIT



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

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)	$I_{D(DC)}$		± 5.0	A
Drain Current (Pulse)	$I_{D(pulse)}$	$PW \leq 10 \mu s$ Duty cycle $\leq 1\%$	± 20.0	A
Total Power Dissipation	P_{T1}	$T_A = 25^\circ\text{C}$	1.0	W
Total Power Dissipation	P_{T2}	$T_C = 25^\circ\text{C}$	6.0	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

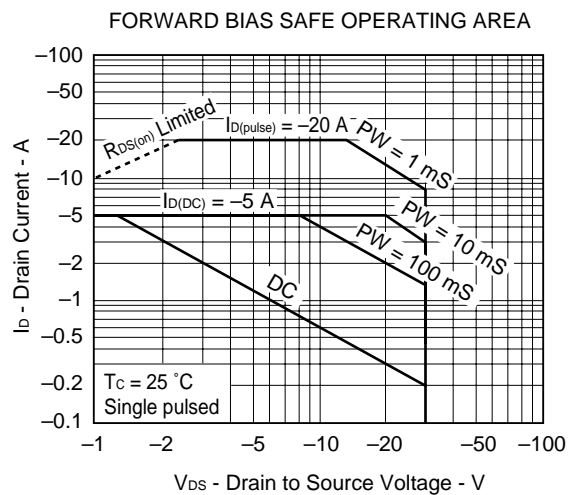
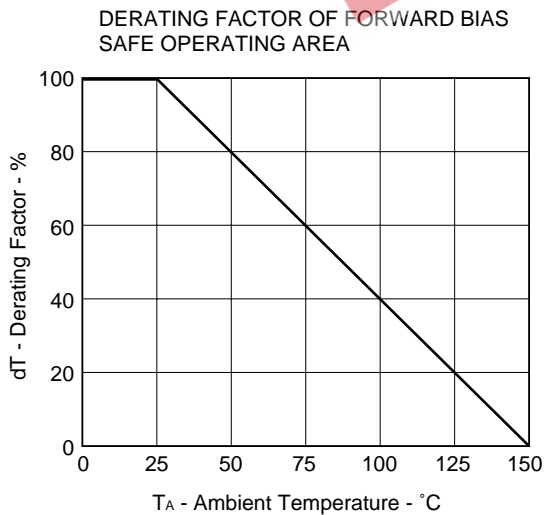
The internal diode connected between the gate and source of this product is to protect the product from static electricity. If the product is used in a circuit where the rated voltage of the product may be exceeded, connect a protection circuit.

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

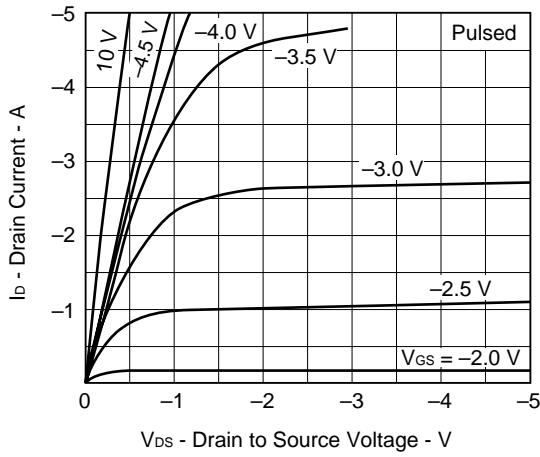
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

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	-1.4	-2.0	V
Forward Transfer Admittance	y _{fs}	V _{DS} = -10 V, I _D = -2.5 A	3.0			S
Drain to Source On-State Resistance	R _{DS(on)1}	V _{GS} = -4 V, I _D = -2.5 A		0.175	0.24	Ω
Drain to Source On-State Resistance	R _{DS(on)2}	V _{GS} = -10 V, I _D = -2.5 A		0.096	0.11	Ω
Input Capacitance	C _{iss}	V _{DS} = -10 V, V _{GS} = 0		790		pF
Output Capacitance	C _{oss}	f = 1.0 MHz		580		pF
Reverse Transfer Capacitance	C _{rss}			280		pF
Turn-On Delay Time	t _{d(on)}	V _{DD} = -15 V, I _D = -2.5 A		10		ns
Rise Time	t _r	V _{GS(on)} = -10 V		110		ns
Turn-Off Delay Time	t _{d(off)}	R _G = 10 Ω, R _L = 6 Ω		195		ns
Fall Time	t _f			185		ns
Gate Input Charge	Q _G	V _{DS} = -24 V		29.8		nC
Gate to Source Charge	Q _{GS}	V _{GS} = -10 V		2.7		nC
Gate to Drain Charge	Q _{GD}	I _D = -5.0 A, I _G = -2 mA		11.5		nC
Internal Diode Forward Voltage	V _{F(S-D)}	I _F = 5.0 A, V _{GS} = 0		1.0		V
Internal Diode Reverse Recovery Time	t _{rr}	I _F = 5.0 A, V _{GS} = 0		140		ns
Internal Diode Reverse Recovery Charge	Q _{rr}	di/dt = 50 A/μs		160		nC

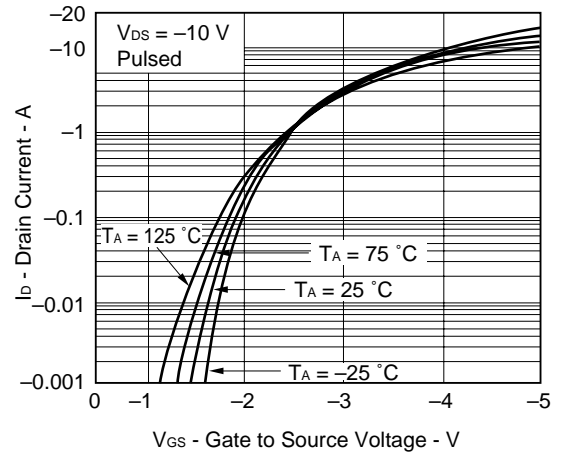
TYPICAL CHARACTERISTICS (T_A = 25 °C)



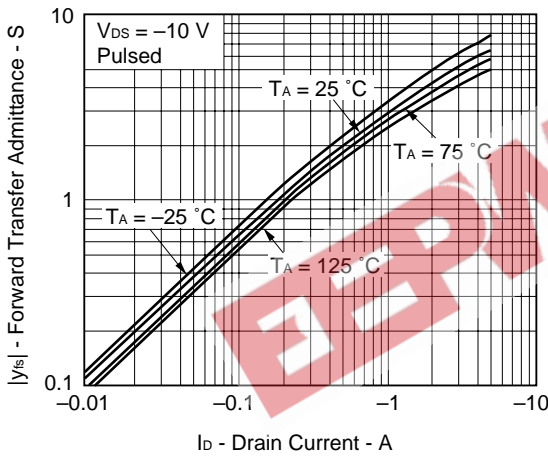
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



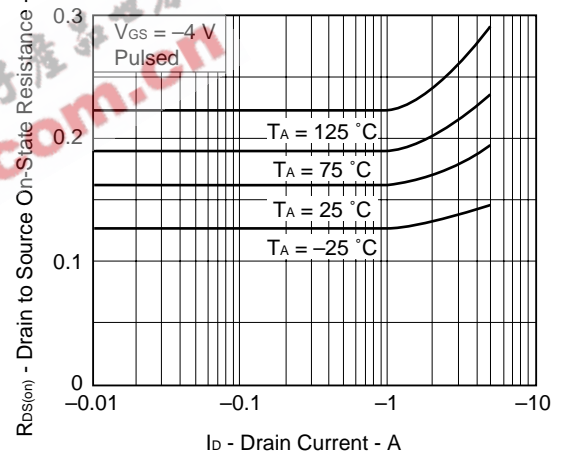
TRANSFER CHARACTERISTICS



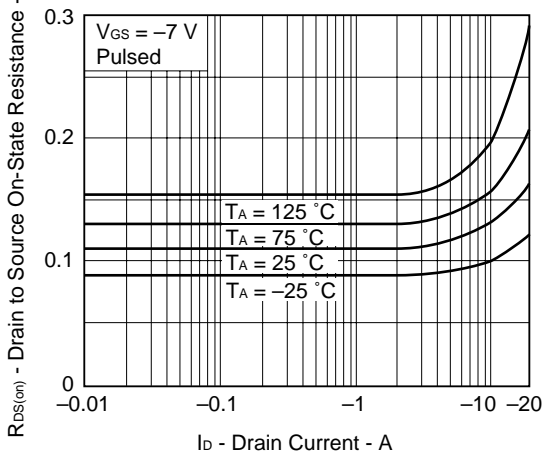
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



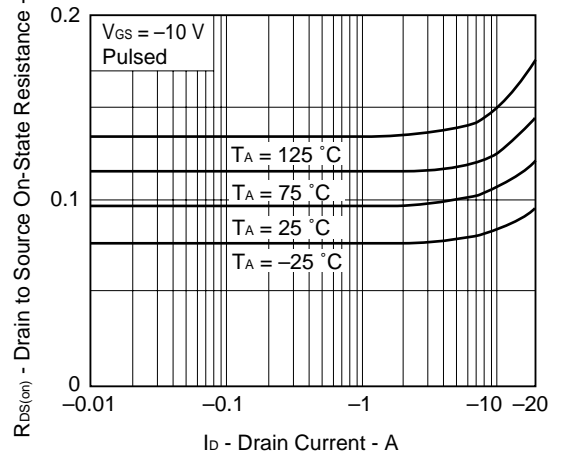
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



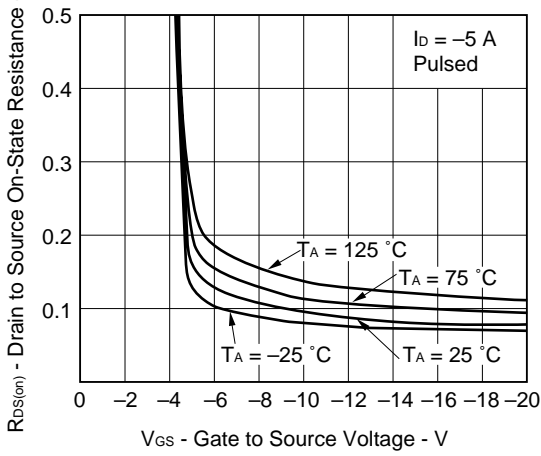
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



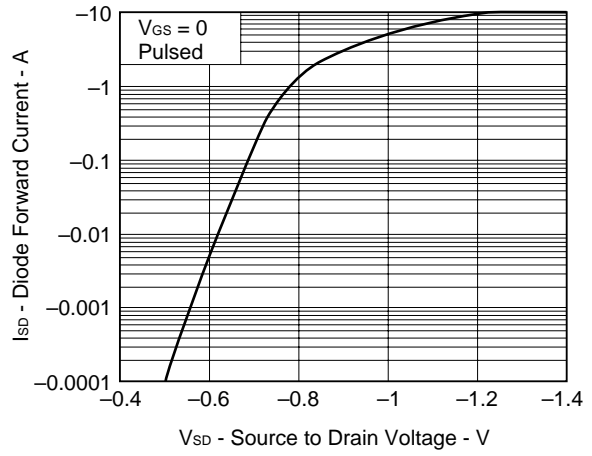
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



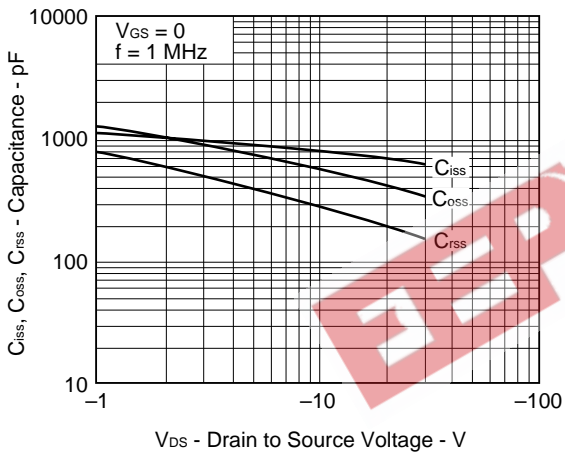
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



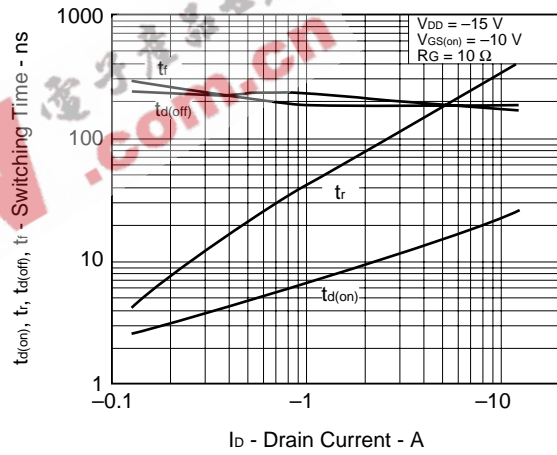
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



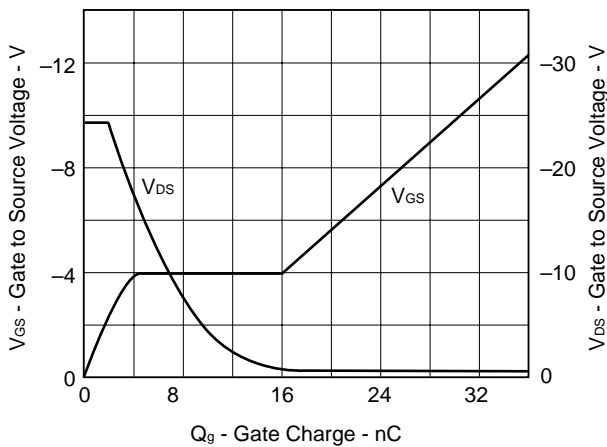
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE

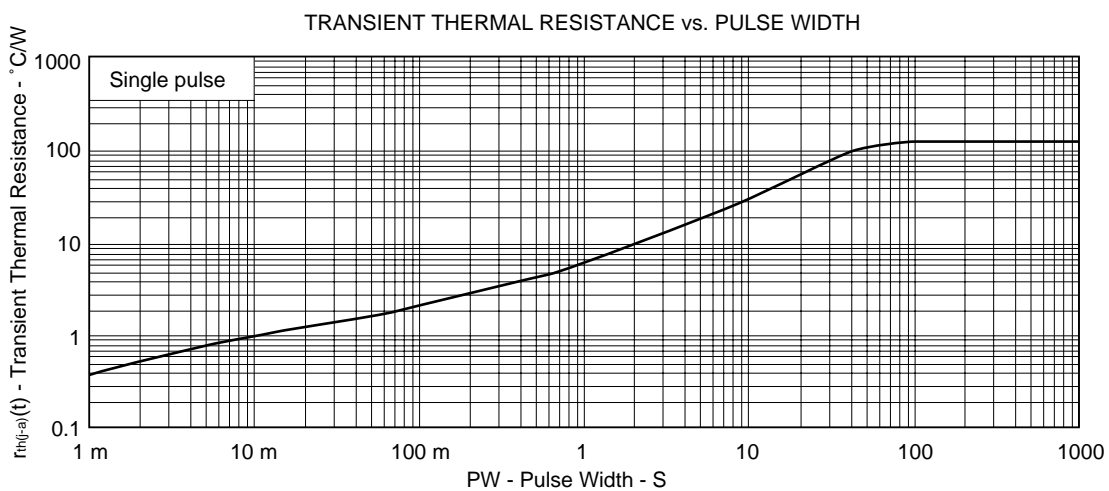


SWITCHING CHARACTERISTICS



DYNAMIC INPUT/OUTPUT CHARACTERISTICS





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

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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.

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Anti-radioactive design is not implemented in this product.