To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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RENESAS

MOS FIELD EFFECT POWER TRANSISTOR

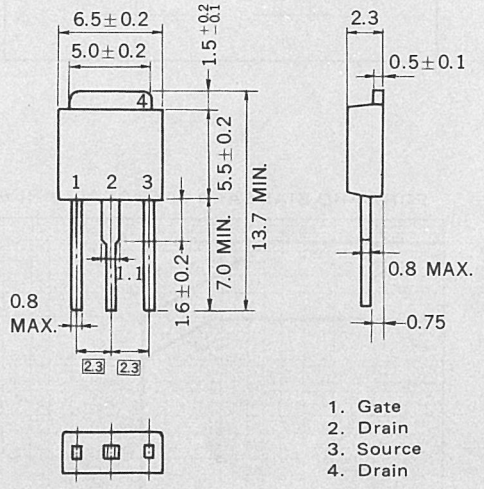
Phase-out/Discontinued

2SK446

FAST SWITCHING
N-CHANNEL SILICON POWER MOS FET
INDUSTRIAL USE

PACKAGE DIMENSIONS

(Unit: mm)



FEATURES

- Suitable for switching power supplies, actuater controls, and pulse circuits.
- Low $R_{DS(on)}$
- No second breakdown

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	$I_{D(DC)}$	±2	A
Total Power Dissipation	P_T	20	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	−55 to +150	°C

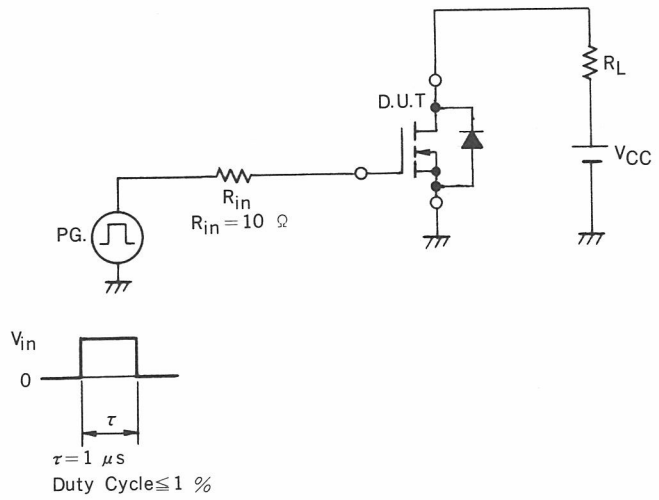
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

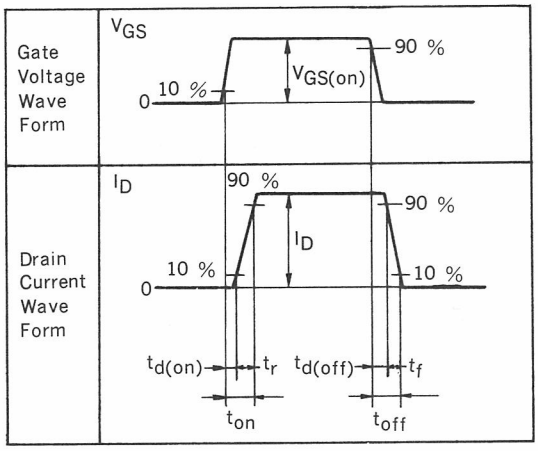
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Leakage Current	I_{DSS}			50	μA	V_{DS} = 20 V, V_{GS} = 0
Gate to Source Leakage Current	I_{GSS}			±100	nA	V_{GS} = ±20 V, V_{DS} = 0
Gate to Source Cutoff Voltage	$V_{GS(off)}$	1		4	V	V_{DS} = 10 V, I_D = 1 mA
Forward Transfer Admittance	$\|y_{fs}\|$	0.5			S	V_{DS} = 10 V, I_D = 1 A
Drain to Source On-State Resistance	$R_{DS(on)}$			0.4	Ω	V_{GS} = 10 V, I_D = 1 A
Input Capacitance	C_{iss}		350		pF	V_{DS} = 10 V, V_{GS} = 0 f = 1 MHz
Output Capacitance	C_{oss}		250		pF	
Reverse Transfer Capacitance	C_{rss}		150		pF	
Turn-On Delay Time	$t_{d(on)}$		10		ns	I_D = 1 A, $V_{CC} \fallingdotseq$ 10 V $V_{GS(on)}$ = 10 V R_L = 10 Ω R_{in} = 10 Ω
Rise Time	t_r		20		ns	
Turn-Off Delay Time	$t_{d(off)}$		20		ns	
Fall Time	t_f		20		ns	

NEC Corporation

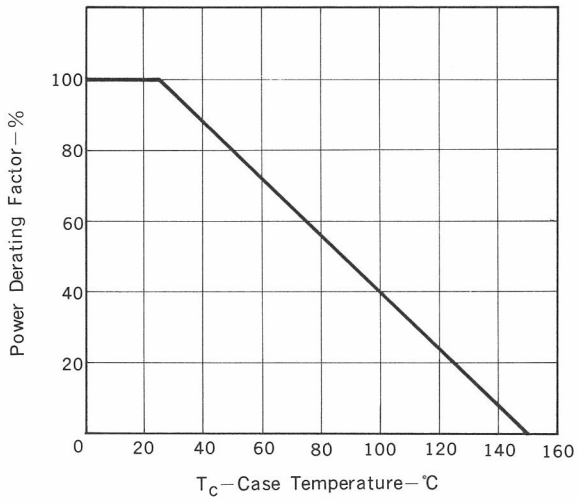
Phase-out/Discontinued

TURN-ON AND TURN-OFF TIME TEST CIRCUIT

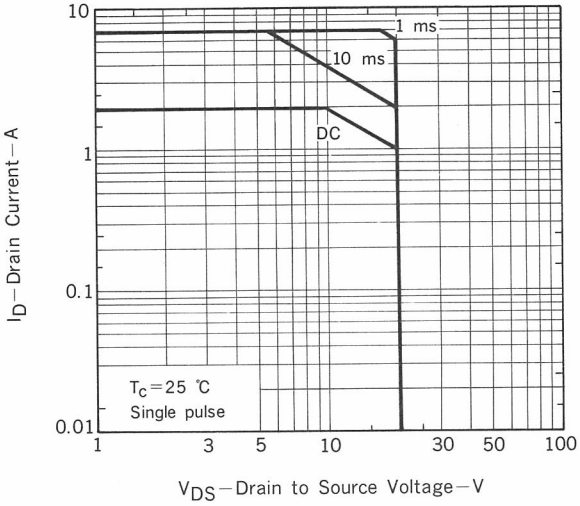




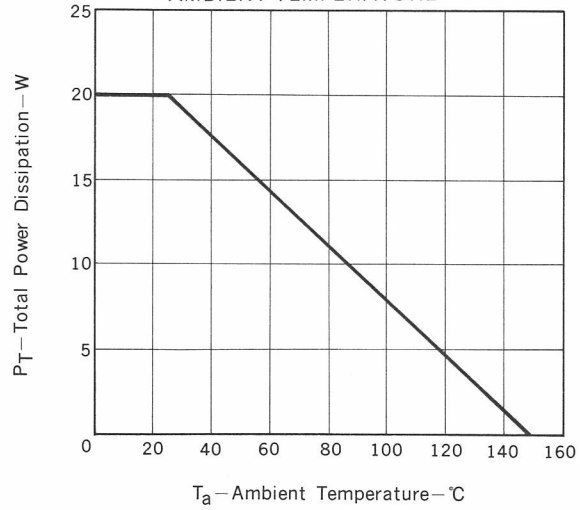
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



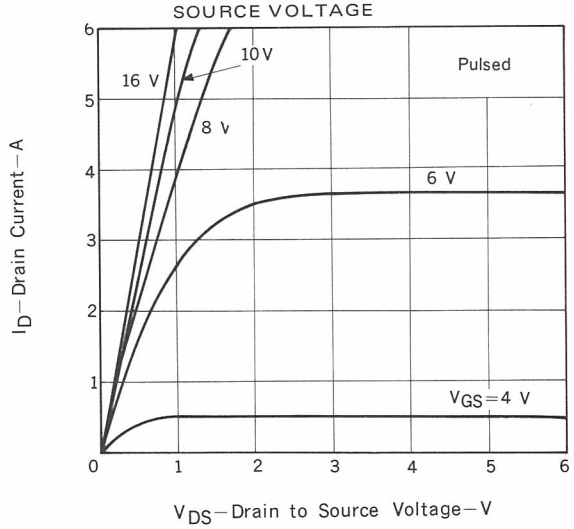
FORWARD BIAS SAFE OPERATING AREA



TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE

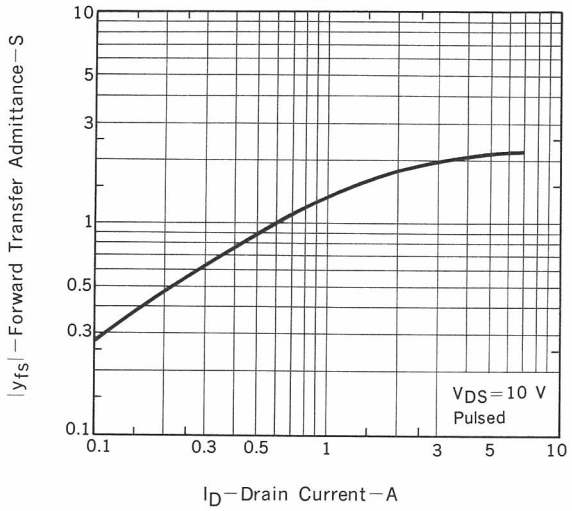


DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE

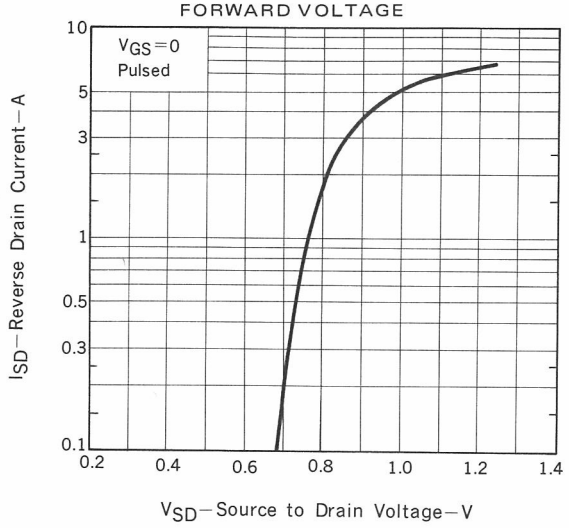


Phase-out/Discontinued

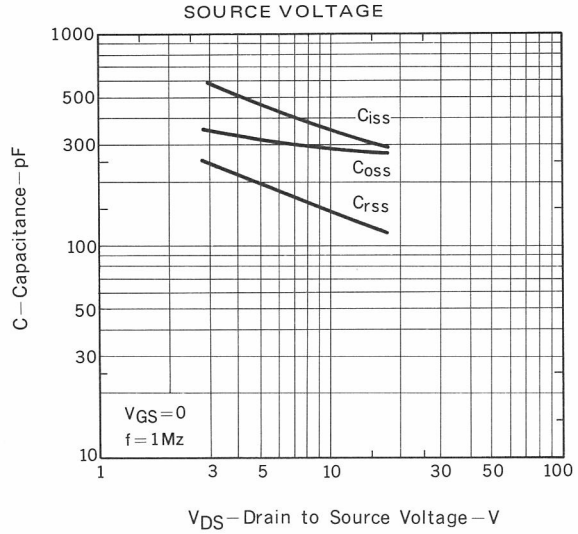
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



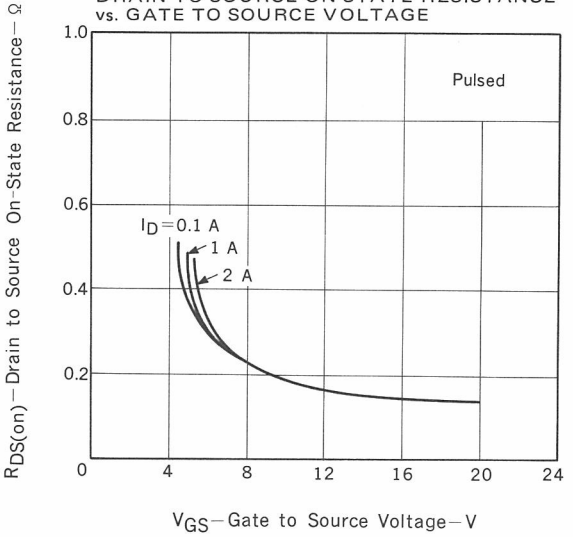
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



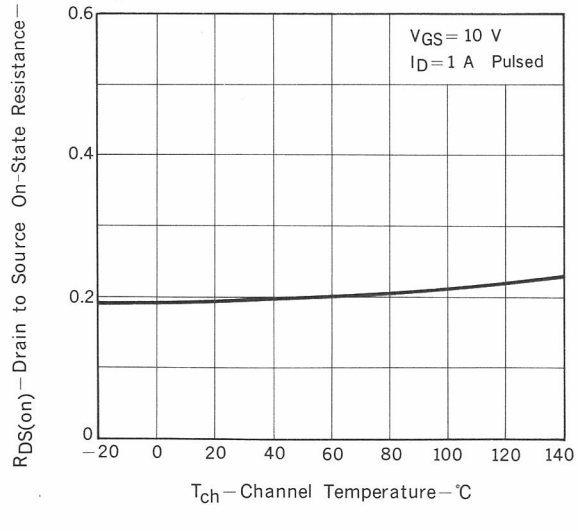
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



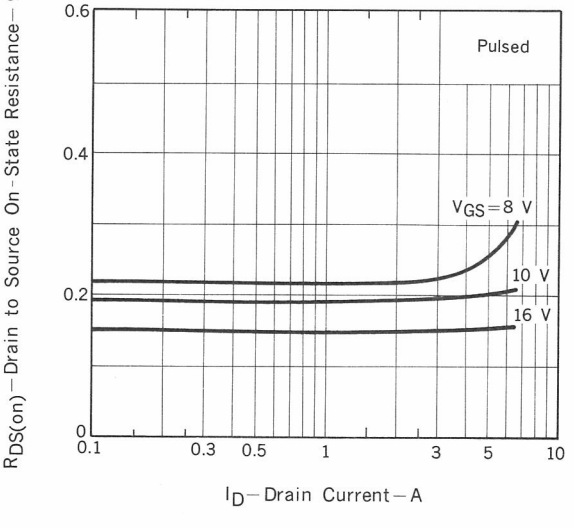
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE

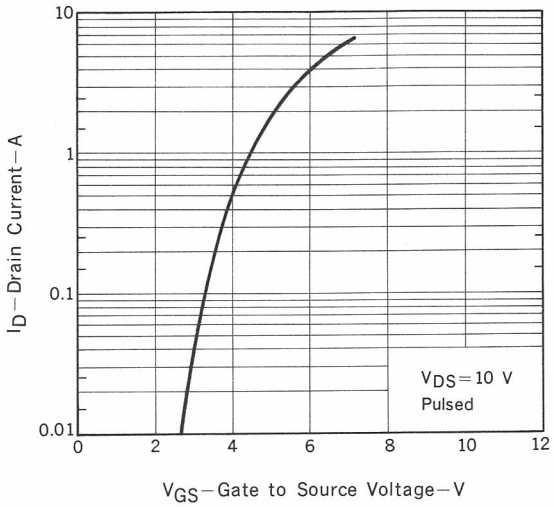


DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT

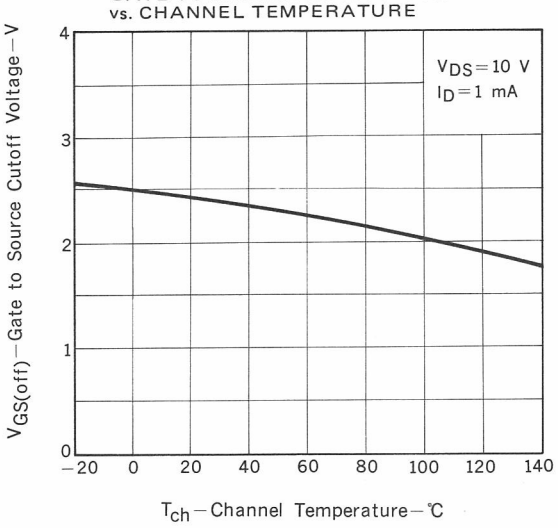


Phase-out/Discontinued

TRANSFER CHARACTERISTIC



GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



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