

Phase-out/Discontinued

2SK873

DESCRIPTION The 2SK873 is N-channel MOS Field Effect Power Transistor designed for switching power supplies, DC-DC converters.

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

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature -55 to 150 °C

Channel Temperature 150 °C Maximum

Maximum Power Dissipation ($T_C = 25\text{ °C}$)

Total Power Dissipation 100 W

Maximum Voltages and Current ($T_a = 25\text{ °C}$)

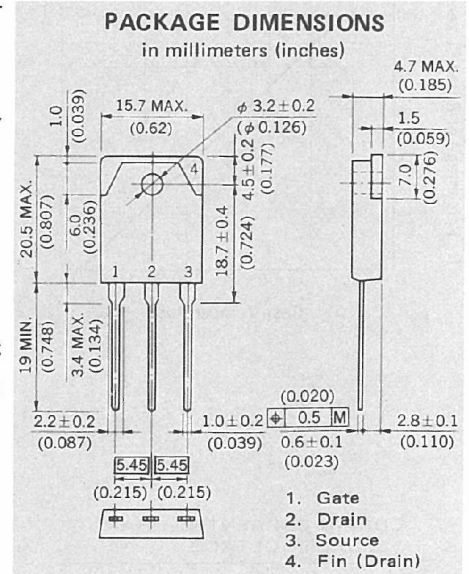
V_{DSS} Drain to Source Voltage 450 V

V_{GSS} Gate to Source Voltage ±20 V

$I_{D(DC)}$ Drain Current (DC) ±8 A

$I_{D(pulse)}$ Drain Current (pulse)* ±32 A

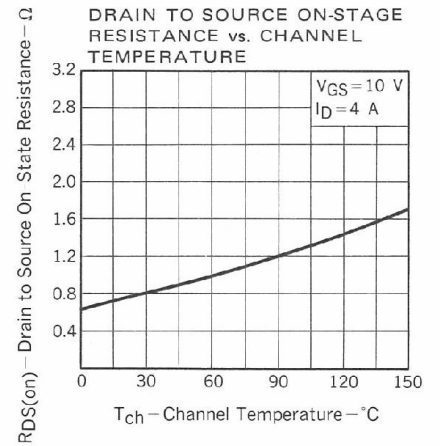
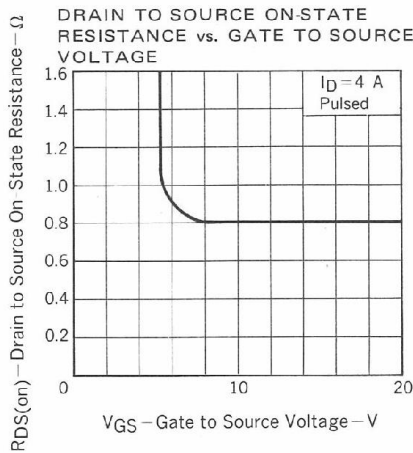
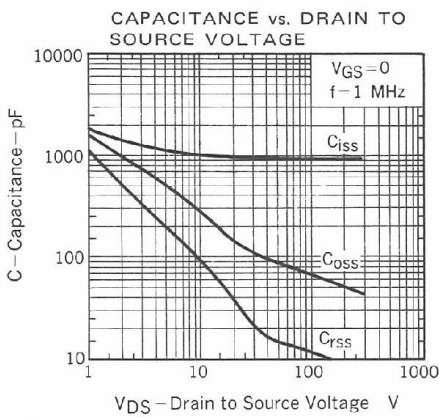
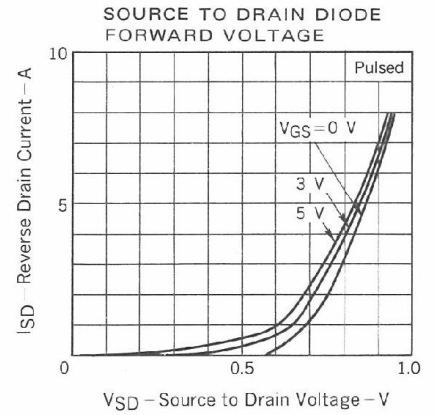
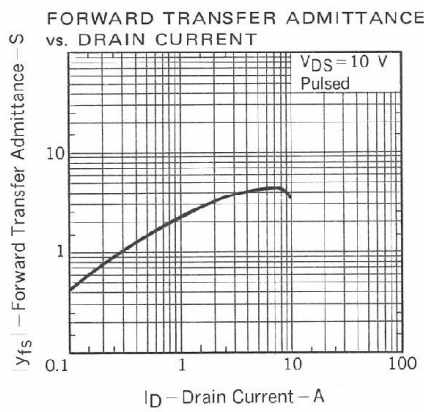
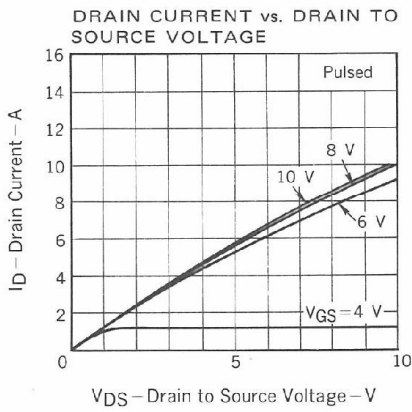
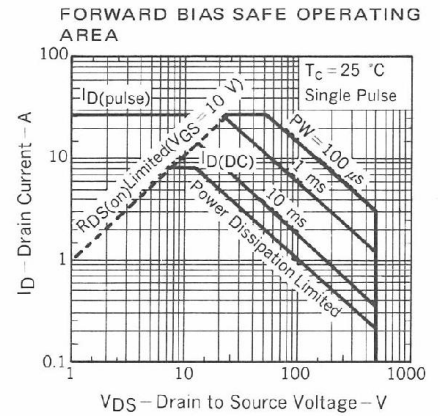
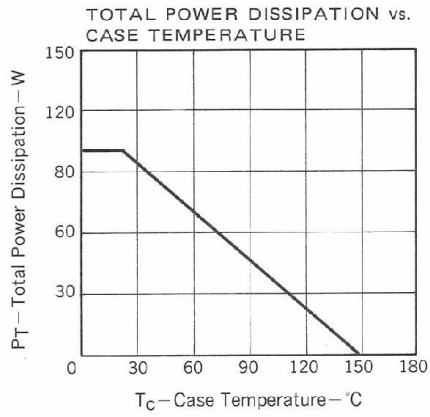
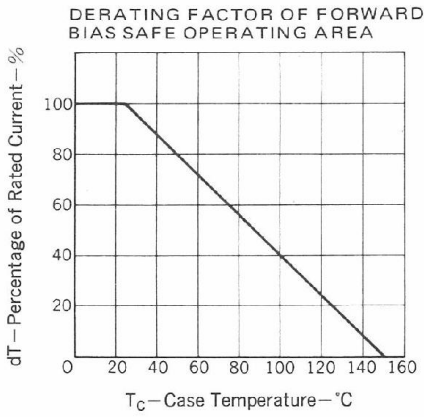
*PW ≤ 100 μs, Duty Cycle ≤ 2 %



ELECTRICAL CHARACTERISTICS ($T_a = 25\text{ °C}$)

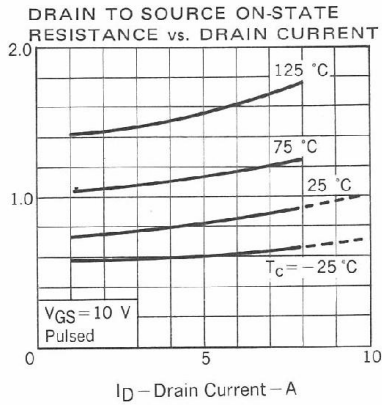
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
I_{DSS}	Drain Leakage Current			100	μA	$V_{DS} = 450\text{ V}, V_{GS} = 0$
I_{GSS}	Gate to Source Leakage Current			±100	nA	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1.5		3.5	V	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$
$ Y_{fs} $	Forward Transfer Admittance	3.0			S	$V_{DS} = 10\text{ V}, I_D = 4\text{ A}$
$R_{DS(on)}$	Drain to Source On-State Resistance		0.80	1.1	Ω	$V_{GS} = 10\text{ V}, I_D = 4\text{ A}$
C_{iss}	Input Capacitance		1300		pF	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$
C_{oss}	Output Capacitance		500		pF	
C_{rss}	Reverse Transfer Capacitance		70		pF	
$t_{d(on)}$	Turn-On Delay Time		20		ns	$I_D = 4\text{ A}, V_{DD} \cong 150\text{ V}$ $V_{GS(on)} = 10\text{ V}$ $R_{in} = 10\text{ Ω}$
t_r	Rise Time		50		ns	
$t_{d(off)}$	Turn-Off Delay Time		100		ns	
t_f	Fall Time		50		ns	

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

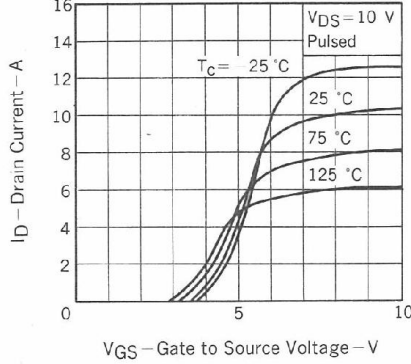


Phase-out/Discontinued

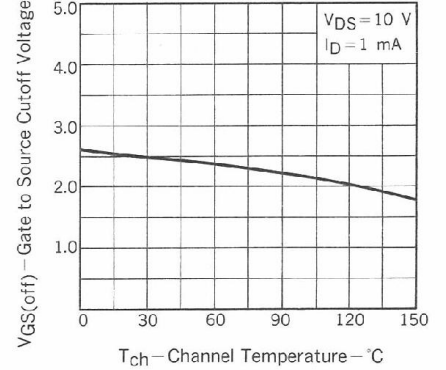
$R_{DS(on)}$ — Drain to Source On State Resistance — Ω



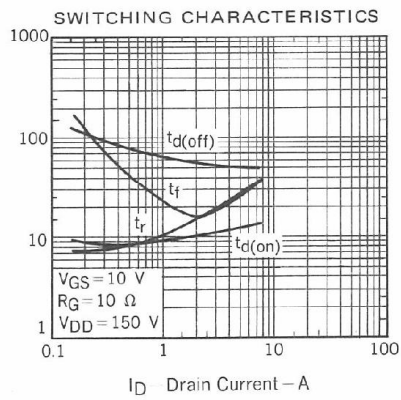
TYPICAL TRANSFER CHARACTERISTICS



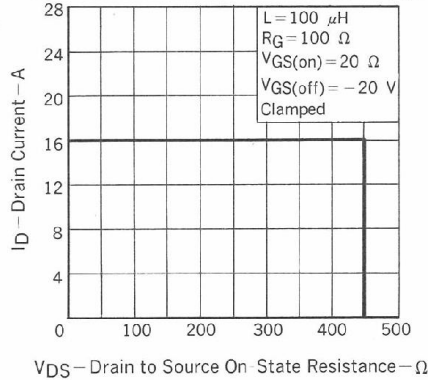
GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



$t_{d(on)}$, t_r , $t_d(off)$, t_f — Switching Time — ns

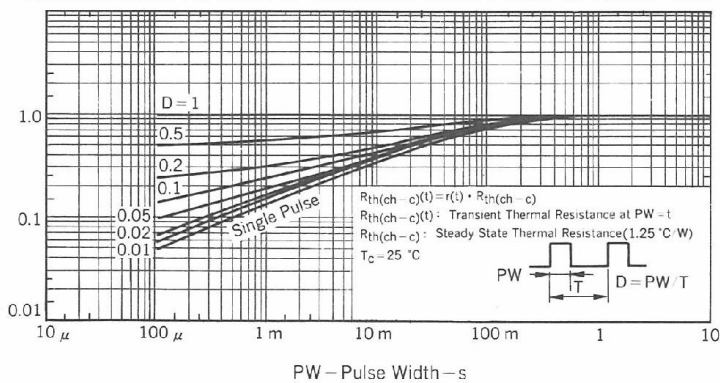


REVERSE BIAS SAFE OPERATING AREA



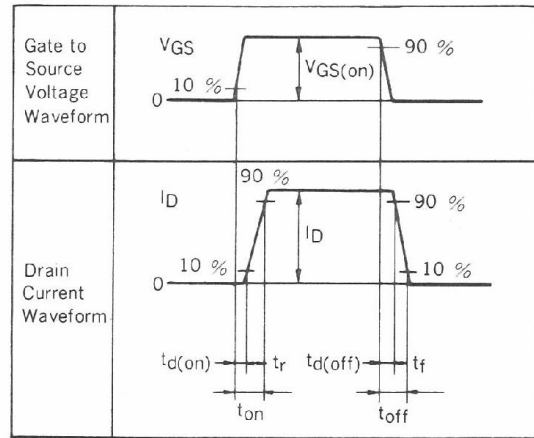
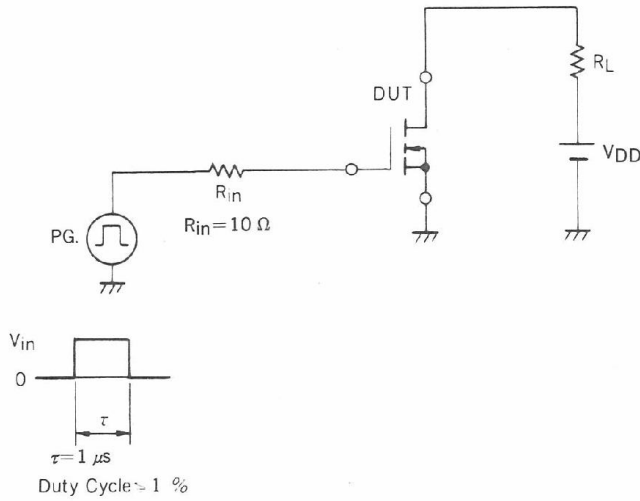
$r(t)$ — Normalized Transient Thermal Resistance

NORMALIZED TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH

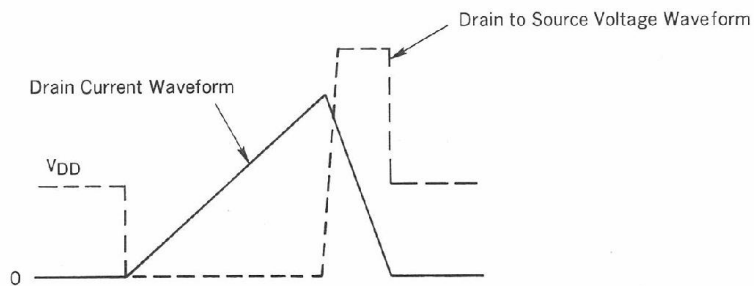
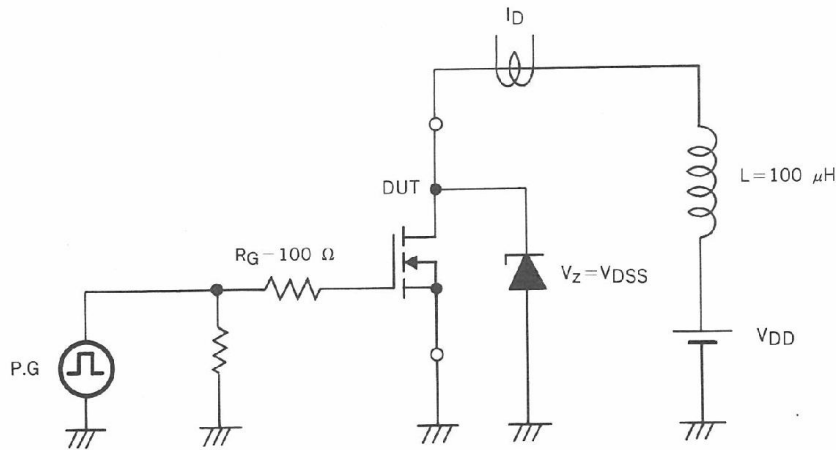


Phase-out/Discontinued

SWITCHING TIME TEST CIRCUIT



CLAMPED INDUCTIVE TEST CIRCUIT



Clamped Inductive Waveforms