

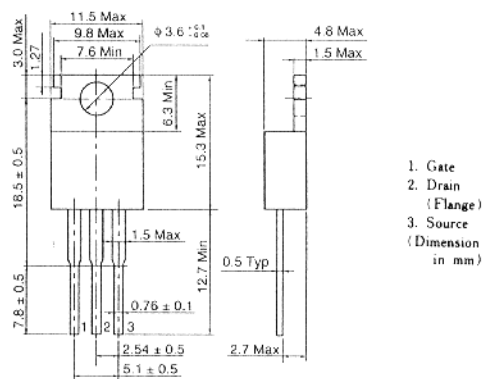
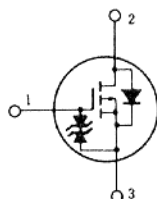
2SJ173

SILICON P-CHANNEL MOS FET

HIGH SPEED POWER SWITCHING

■ FEATURES

- Low On-Resistance
- High Speed Switching
- Low Drive Current
- 4 V Gate Drive Device
 - Can be driven from 5 V source
- Suitable for Motor Drive, DC-DC Converter, Power Switch and Solenoid Drive



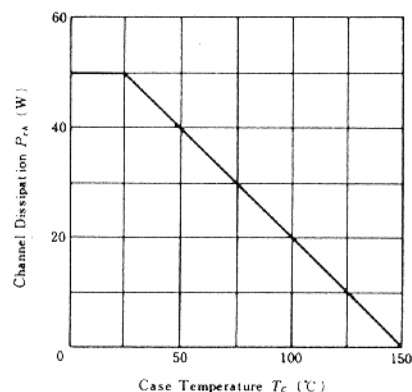
(JEDEC TO-220AB)

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

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	-15	A
Drain Peak Current	$I_{D(pk)}$ *	-60	A
Body-Drain Diode	I_{DR}	-15	A
Reverse Drain Current	I_{DR}	-15	A
Channel Dissipation	P_{ch} **	50	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$

* $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$
 ** Value at $T_c = 25^\circ\text{C}$

POWER VS. TEMPERATURE DERATING

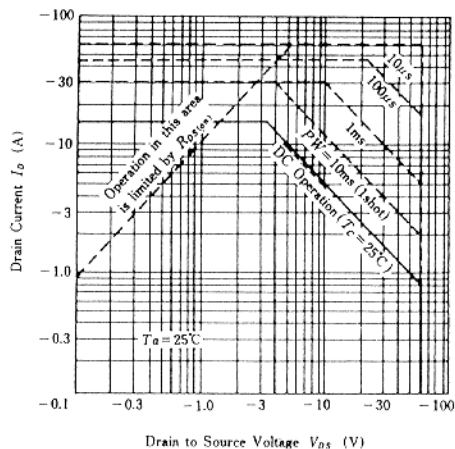


■ ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

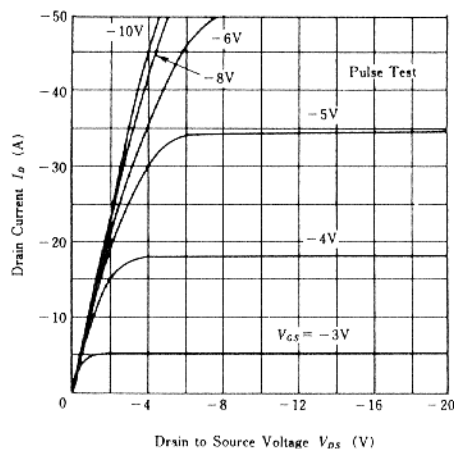
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$I_D = -10\text{mA}$, $V_{GS} = 0$	-60	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GS}$	$I_G = \pm 100 \mu\text{A}$, $V_{DS} = 0$	± 20	—	—	V
Gate-Source Leak Current	I_{GSS}	$V_{GS} = \pm 16\text{V}$, $V_{DS} = 0$	—	—	± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -50\text{V}$, $V_{GS} = 0$	—	—	-250	μA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D = -1\text{mA}$, $V_{DS} = -10\text{V}$	-1.0	—	-2.0	V
Static Drain-Source on State Resistance	$R_{DS(on)}$	$I_D = -8\text{A}$, $V_{GS} = -10\text{V}$ *	—	0.09	0.11	Ω
		$I_D = -8\text{A}$, $V_{GS} = -4\text{V}$ *	—	0.13	0.17	
Forward Transfer Admittance	$ y_{fs} $	$I_D = -8\text{A}$, $V_{DS} = -10\text{V}$ *	6.0	9.5	—	S
Input Capacitance	C_{iss}	$V_{DS} = -10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	—	1400	—	pF
Output Capacitance	C_{oss}		—	720	—	pF
Reverse Transfer Capacitance	C_{rss}		—	220	—	pF
Turn-on Delay Time	$t_{d(on)}$	$I_D = -8\text{A}$, $V_{GS} = -10\text{V}$, $R_L = 3.75 \Omega$	—	15	—	ns
Rise Time	t_r		—	120	—	ns
Turn-off Delay Time	$t_{d(off)}$		—	220	—	ns
Fall Time	t_f		—	160	—	ns
Body-Drain Diode Forward Voltage	V_{DF}	$I_F = -15\text{A}$, $V_{GS} = 0$	—	-1.2	—	V
Body-Drain Diode Reverse Recovery Time	t_{rr}	$I_F = -15\text{A}$, $V_{GS} = 0$ $di_F/dt = 50\text{A}/\mu\text{s}$	—	230	—	ns

* Pulse Test

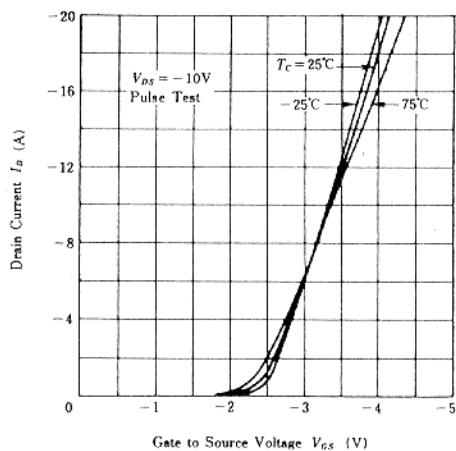
MAXIMUM SAFE OPERATION AREA



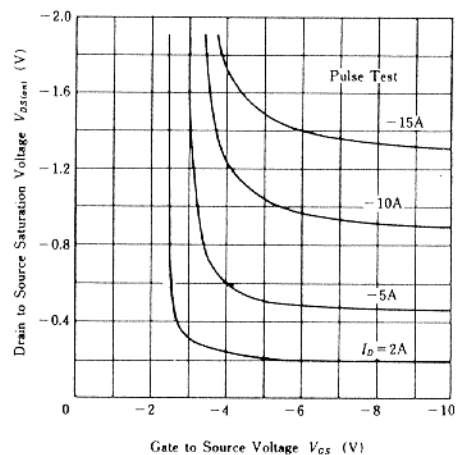
TYPICAL OUTPUT CHARACTERISTICS



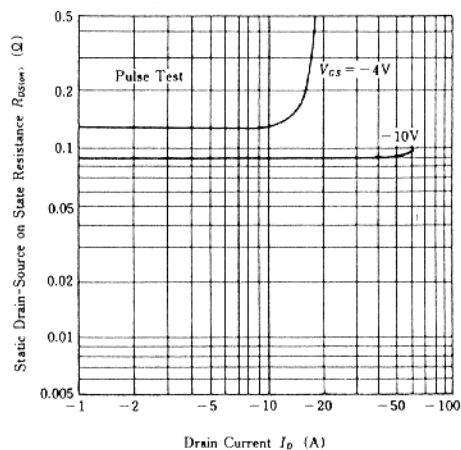
TYPICAL TRANSFER CHARACTERISTICS



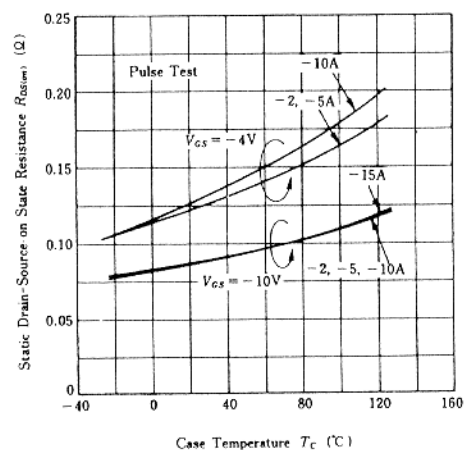
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



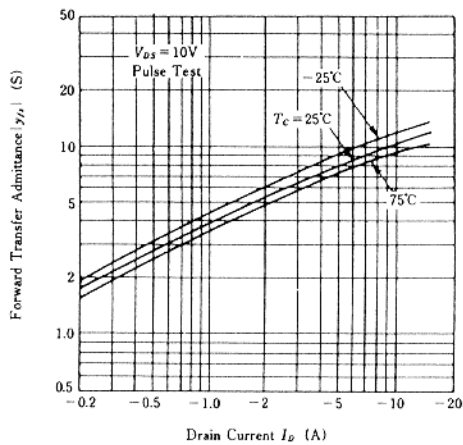
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT



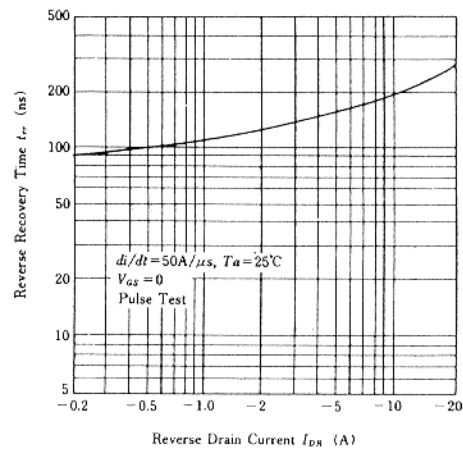
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



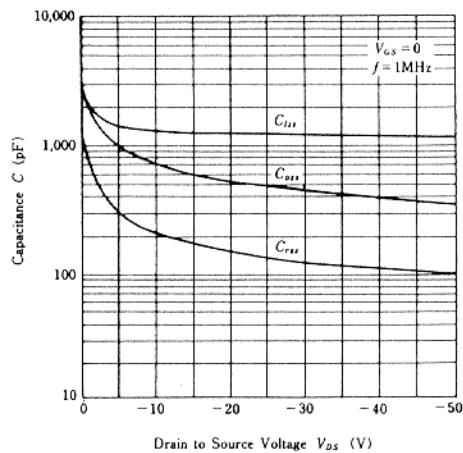
**FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT**



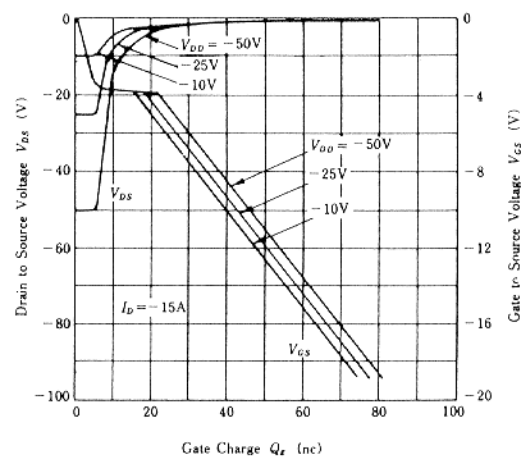
**BODY-DRAIN DIODE REVERSE
RECOVERY TIME**



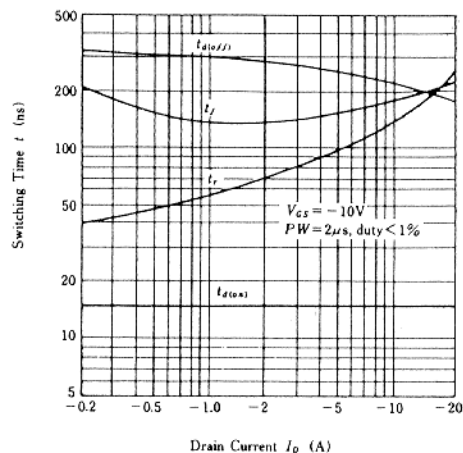
**TYPICAL CAPACITANCE
VS. DRAIN-SOURCE VOLTAGE**



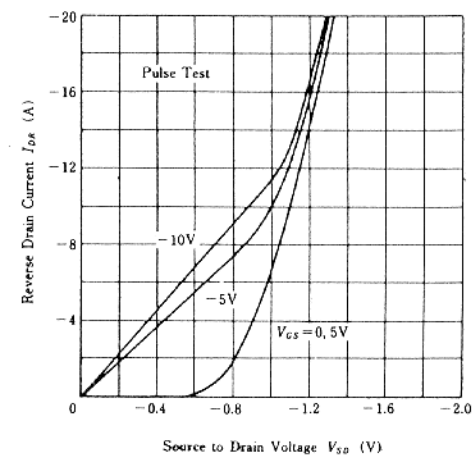
DYNAMIC INPUT CHARACTERISTICS



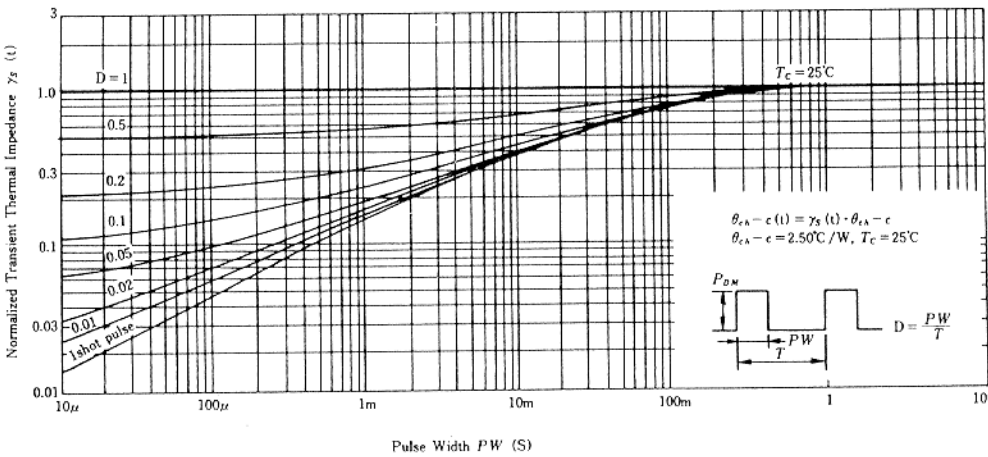
SWITCHING CHARACTERISTICS



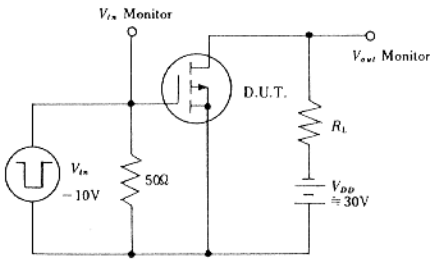
**REVERSE DRAIN CURRENT VS.
SOURCE TO DRAIN VOLTAGE**



NORMALIZED TRANSIENT THERMAL IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

