Ordering number : ENN7148

Discontinued

P-Channel Silicon MOSFET

2SJ589LS

DC / DC Converter Applications

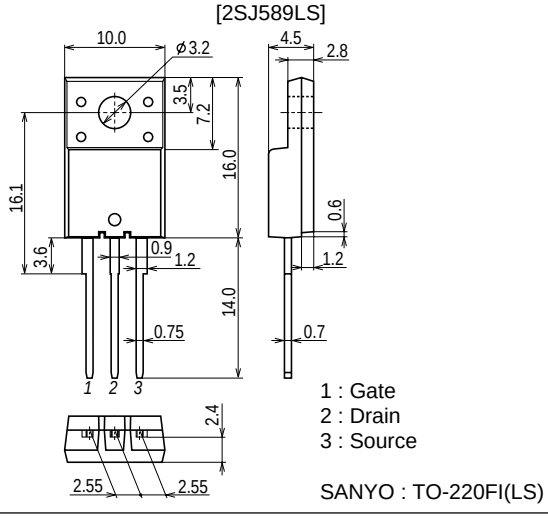
Features

- Low ON-resistance.
- 4V drive.

Package Dimensions

unit : mm

2078C



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		−15	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−60	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25°C	25	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0	−60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−60V, V_{GS}=0			−10	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−1.0		−2.4	V
Forward Transfer Admittance	|yfs|	V_{DS}=−10V, I_D=−8A	10	14		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−8A, V_{GS}=−10V		58	80	mΩ
	R_{DS}(on)2	I_D=−8A, V_{GS}=−4V		80	115	mΩ

Continued on next page.

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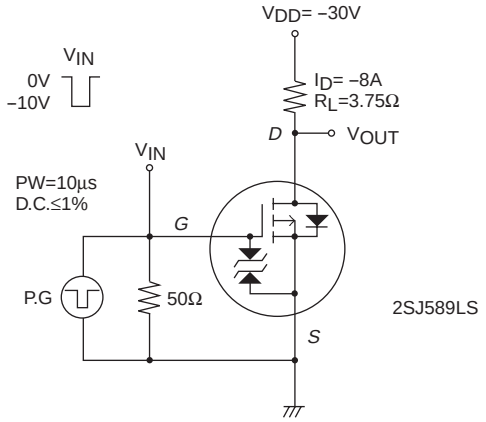
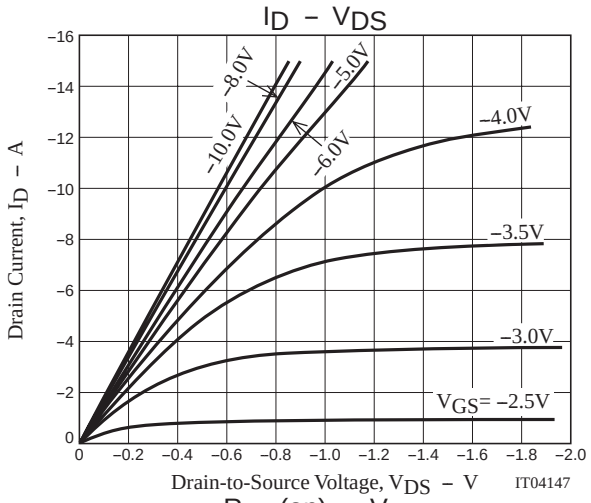
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

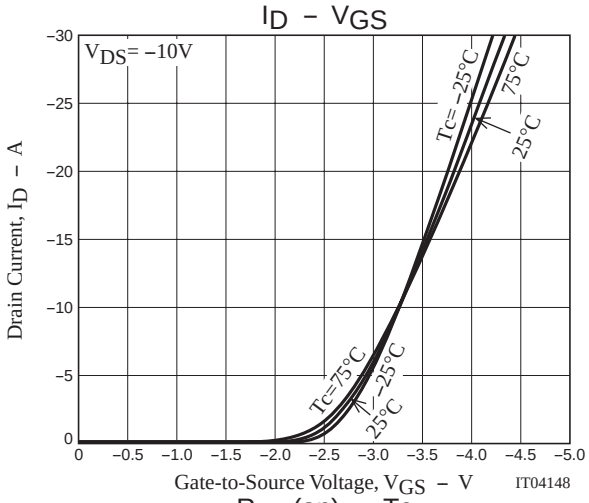
Continued from preceding page.

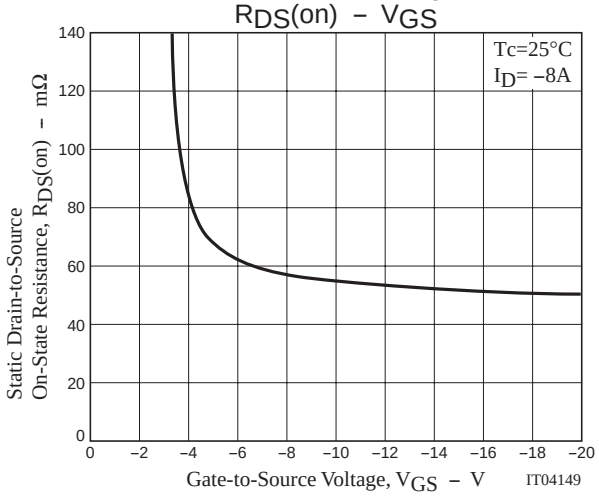
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=-20V, f=1MHz		1300		pF
Output Capacitance	Coss	V_{DS}=-20V, f=1MHz		300		pF
Reverse Transfer Capacitance	Crss	V_{DS}=-20V, f=1MHz		90		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		15		ns
Rise Time	t_{r}	See specified Test Circuit.		70		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		140		ns
Fall Time	t_{f}	See specified Test Circuit.		72		ns
Total Gate Charge	Qg	V_{DS}=-10V, V_{GS}=-10V, I_{D}=-15A		40		nC
Gate-to-Source Charge	Qgs	V_{DS}=-10V, V_{GS}=-10V, I_{D}=-15A		5		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=-10V, V_{GS}=-10V, I_{D}=-15A		10		nC
Diode Forward Voltage	V_{SD}	I_{S}=-15A, V_{GS}=0		-0.91	-1.2	V

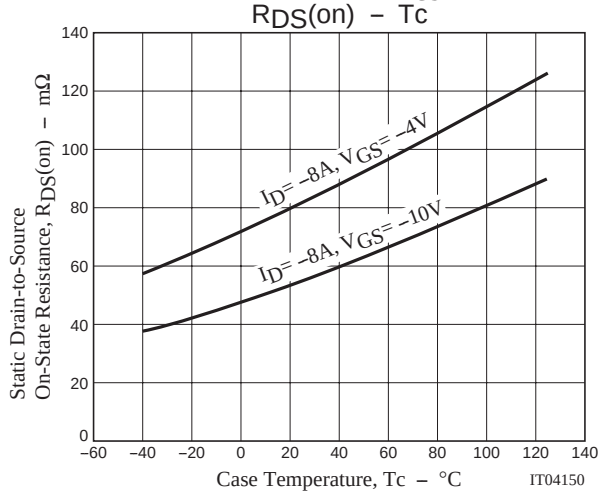
Switching Time Test Circuit

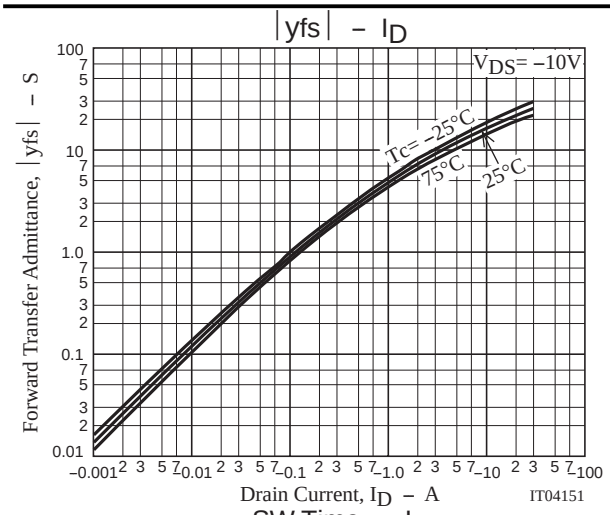


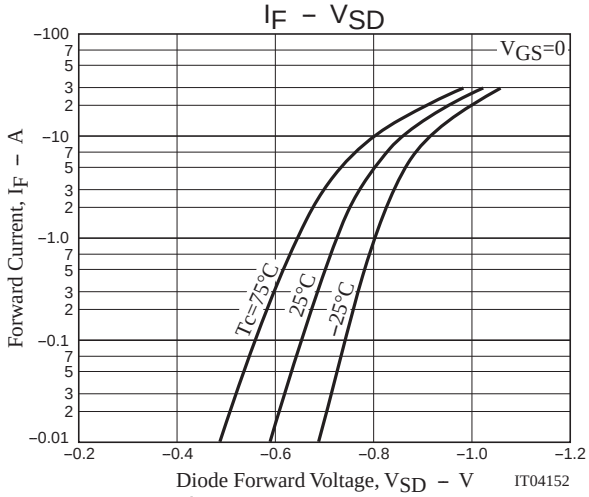


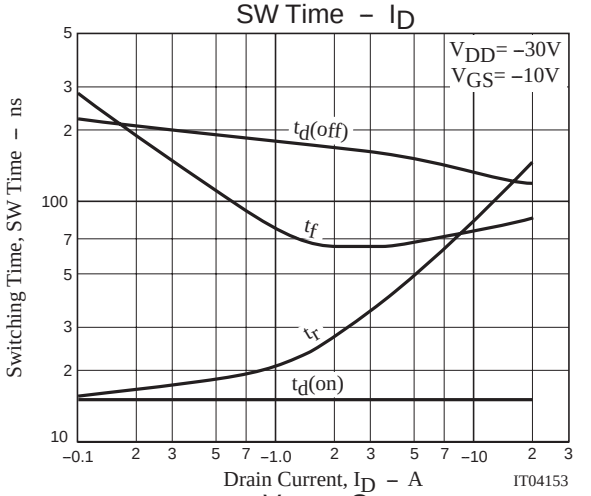


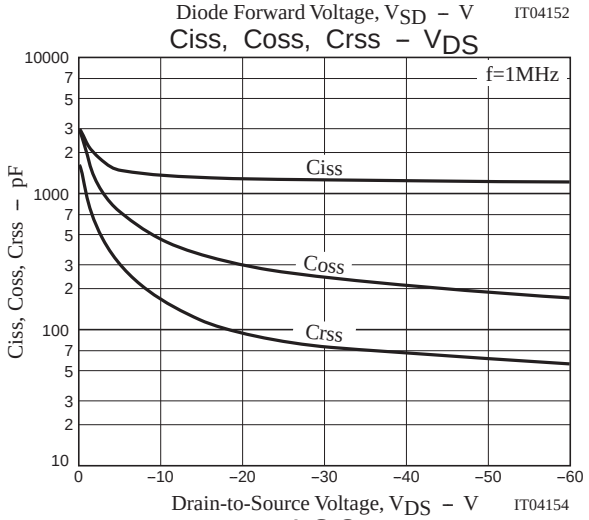


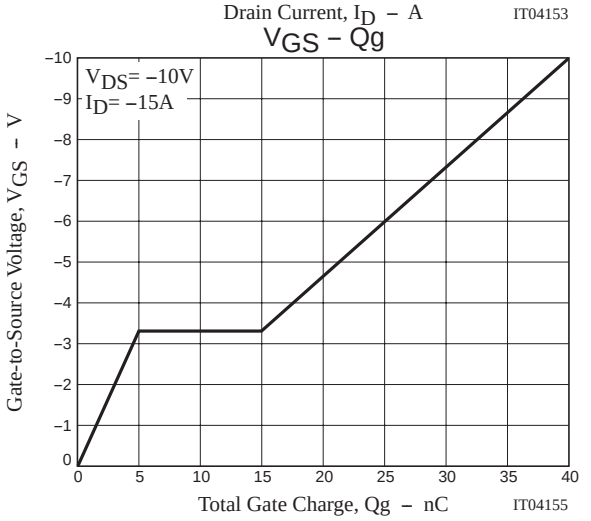


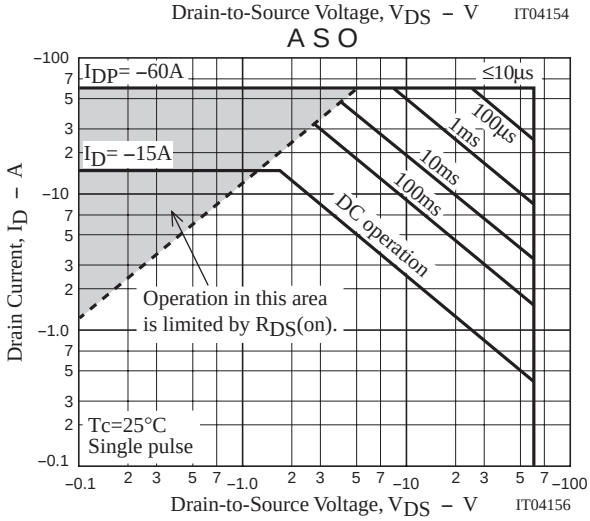

|yfs| – ID
VDS= –10V
Tc= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT04151

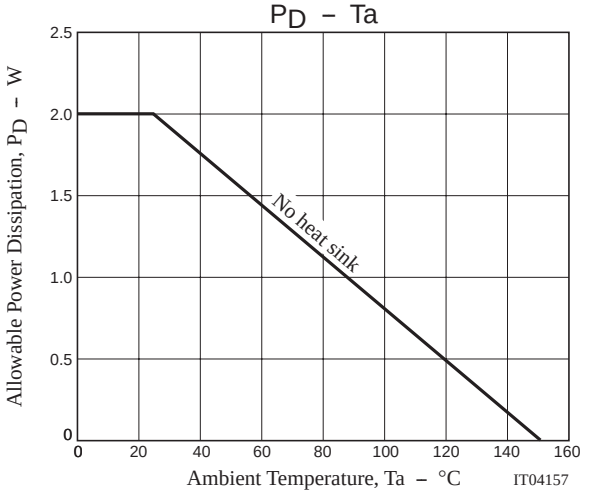

IF – VSD
VGS=0
Tc=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT04152

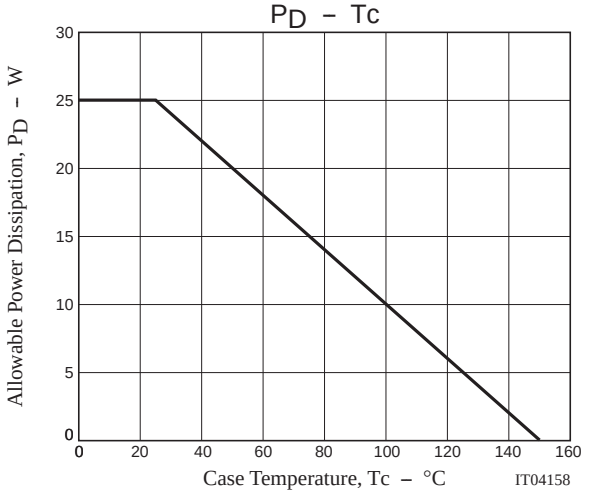

SW Time – ID
VDD= –30V
VGS= –10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT04153


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT04154


VGS – Qg
VDS= –10V
ID= –15A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT04155


A S O
IDP= –60A
≤10μs
100μs
1ms
10ms
100ms
DC operation
ID= –15A
Operation in this area
is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT04156


PD – Ta
No heat sink
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT04157


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT04158

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