Ordering number : ENN7309

P-Channel Silicon MOSFET

2SJ643

Ultrahigh-Speed Switching Applications

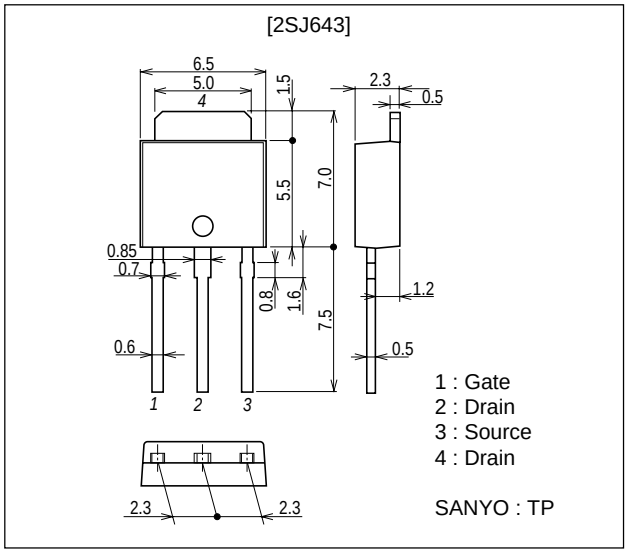
Features

- Low ON-resistance.
- 1.8V drive.

Package Dimensions

unit : mm

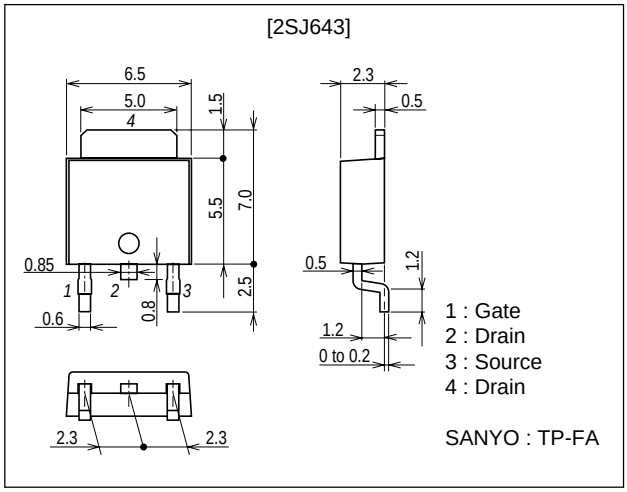
2083B



Package Dimensions

unit : mm

2092B



Specifications

Absolute Maximum Ratings at Ta=25°C

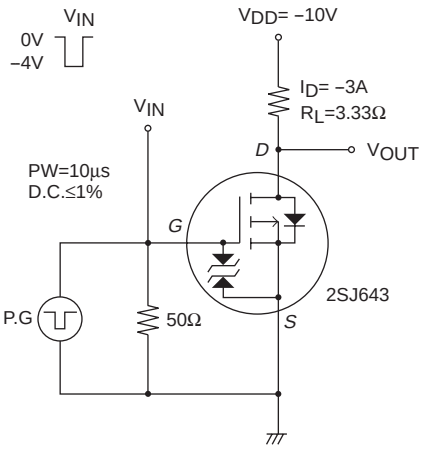
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−20	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		−6	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−24	A
Allowable Power Dissipation	P_D		1	W
		Tc=25˚C	10	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

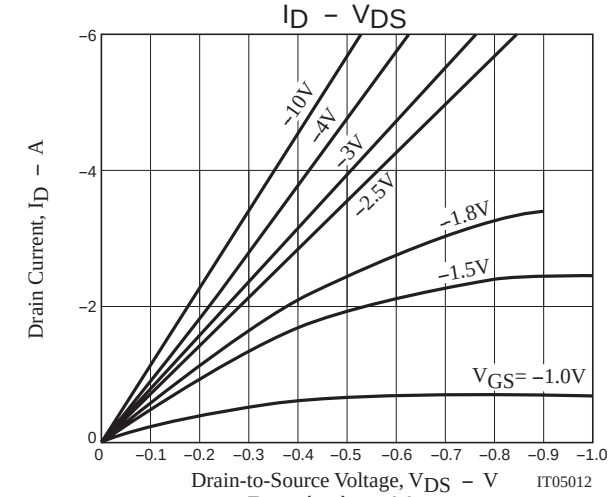
Electrical Characteristics at Ta=25°C

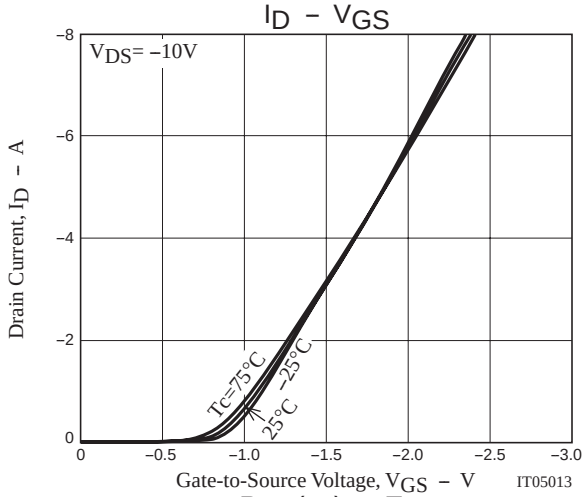
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0	−20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−20V, V_{GS}=0			−10	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}= ±8V, V_{DS}=0			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−0.3		−1.0	V
Forward Transfer Admittance	|yfs|	V_{DS}=−10V, I_D=−3A	2.1	3		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−3A, V_{GS}=−4V		120	160	mΩ
	R_{DS}(on)2	I_D=−1.5A, V_{GS}=−2.5V		150	210	mΩ
	R_{DS}(on)3	I_D=−0.1A, V_{GS}=−1.8V		200	300	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		410		pF
Output Capacitance	Coss	V_{DS}=−10V, f=1MHz		60		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−10V, f=1MHz		40		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		10		ns
Rise Time	t_r	See specified Test Circuit.		20		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		30		ns
Fall Time	t_f	See specified Test Circuit.		10		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−4V, I_D=−6A		4.4		nC
Gate-to-Source Charge	Qgs	V_{DS}=−10V, V_{GS}=−4V, I_D=−6A		0.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−10V, V_{GS}=−4V, I_D=−6A		1.2		nC
Diode Forward Voltage	V_{SD}	I_S=−6A, V_{GS}=0		−1.0	−1.2	V

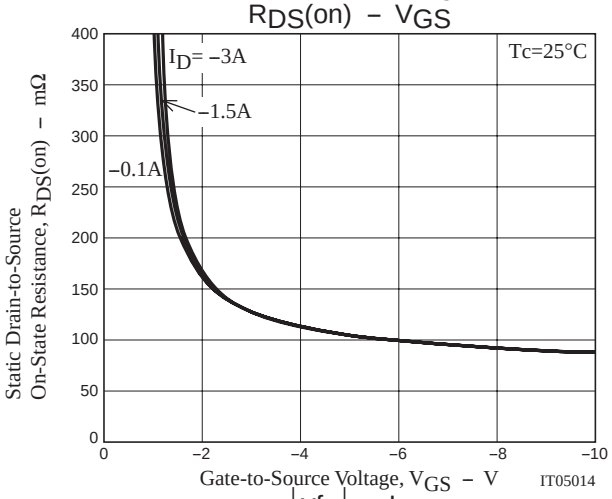
Marking : J643

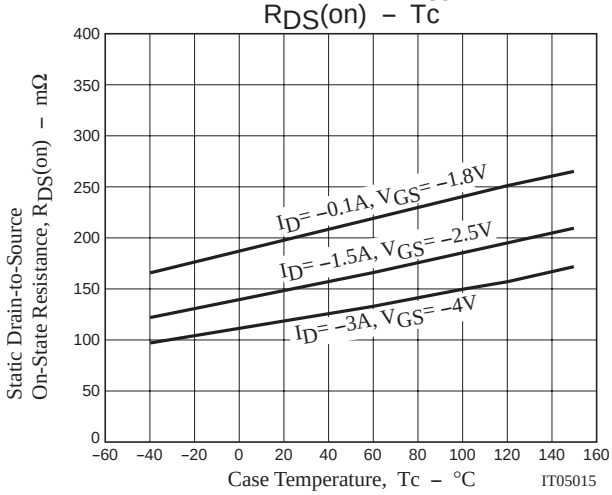
Switching Time Test Circuit

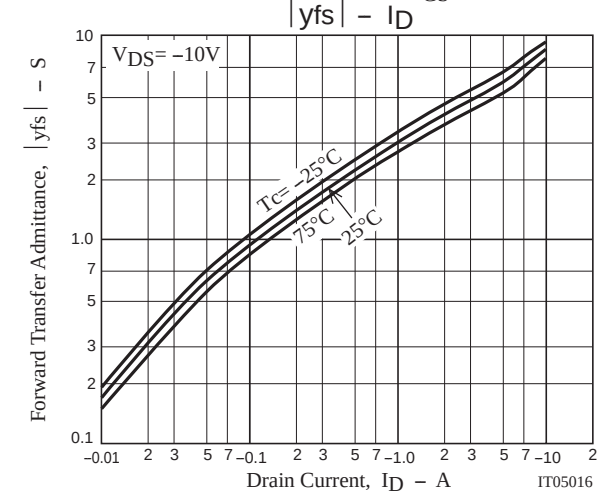


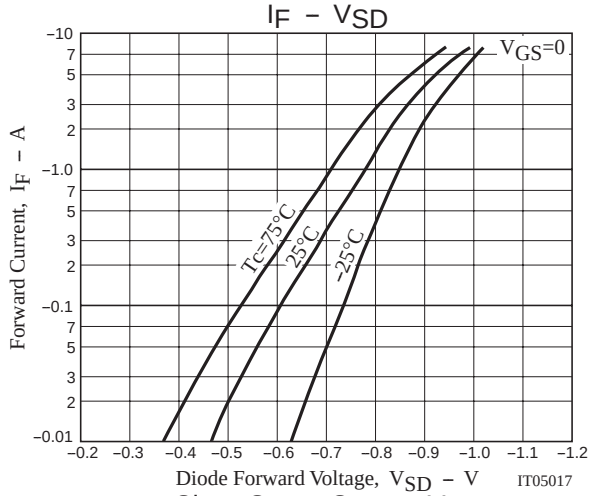

I_D – V_{DS}
Drain Current, I_D – A
Drain-to-Source Voltage, V_{DS} – V
IT05012
–10V
–4V
–3V
–2.5V
–1.8V
–1.5V
V_{GS}= –1.0V

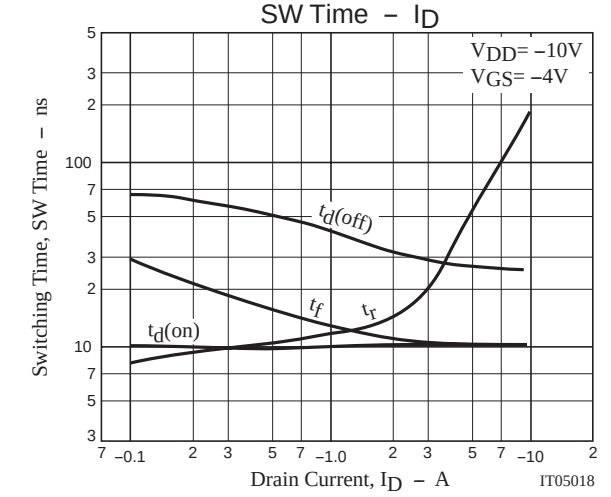

I_D – V_{GS}
V_{DS}= –10V
Drain Current, I_D – A
Gate-to-Source Voltage, V_{GS} – V
IT05013
Tc=75°C
25°C
–25°C

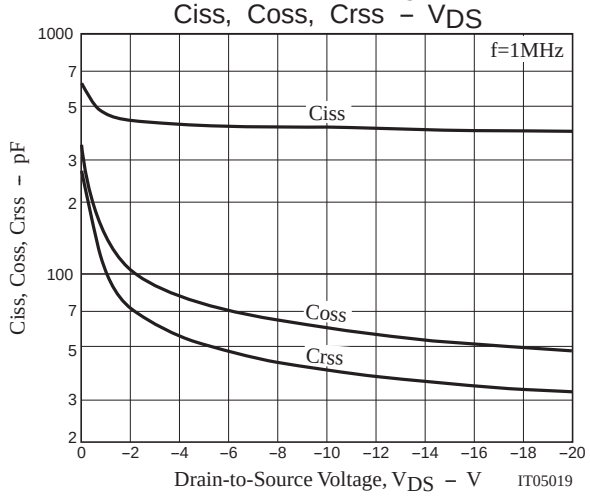

$R_{DS}(on)$ – V_{GS}
I_D= –3A
Tc=25°C
–1.5A
–0.1A
Static Drain-to-Source On-State Resistance, $R_{DS}(on)$ – mΩ
Gate-to-Source Voltage, V_{GS} – V
IT05014

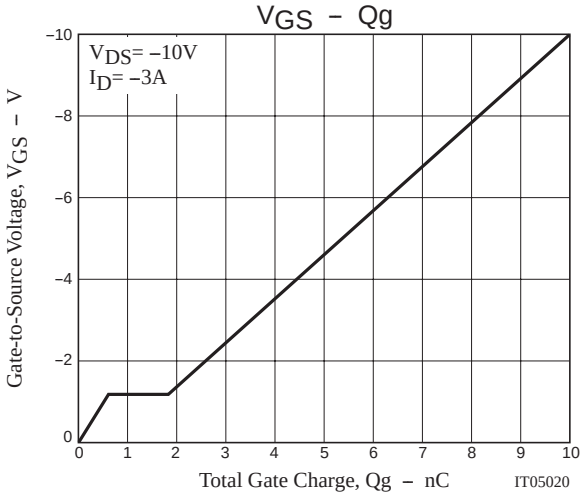

$R_{DS}(on)$ – Tc
I_D= –0.1A, V_{GS}= –1.8V
I_D= –1.5A, V_{GS}= –2.5V
I_D= –3A, V_{GS}= –4V
Static Drain-to-Source On-State Resistance, $R_{DS}(on)$ – mΩ
Case Temperature, Tc – °C
IT05015

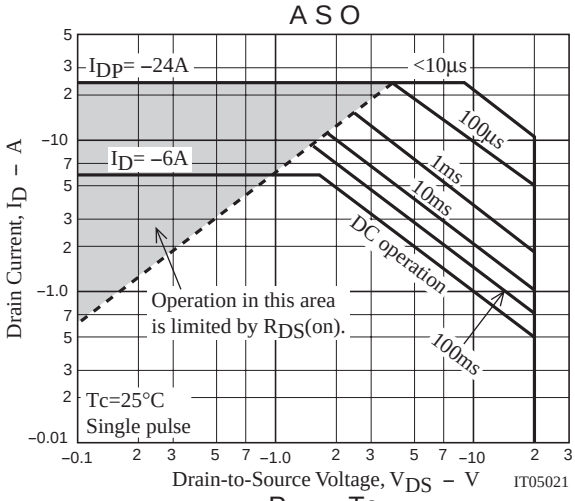

|yfs| – I_D
V_{DS}= –10V
Tc= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, I_D – A
IT05016

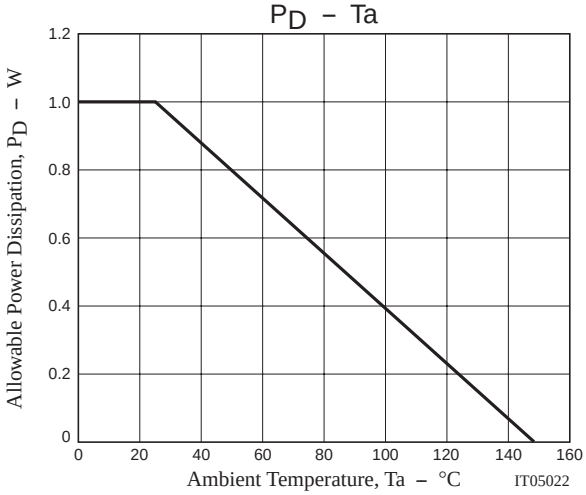

I_F – V_{SD}
V_{GS}=0
Tc=75°C
25°C
–25°C
Forward Current, I_F – A
Diode Forward Voltage, V_{SD} – V
IT05017

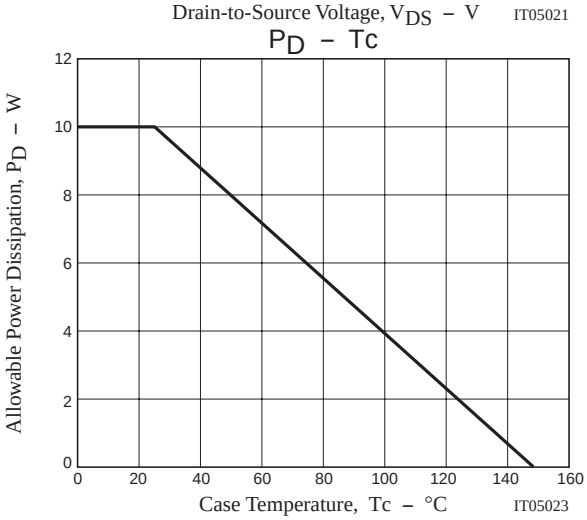

SW Time – I_D
V_{DD}= –10V
V_{GS}= –4V
$t_{d(off)}$
t_f
t_r
t_d(on)
Switching Time, SW Time – ns
Drain Current, I_D – A
IT05018


Ciss, Coss, Crss – V_{DS}
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, V_{DS} – V
IT05019









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