Ordering number : ENN8282

SANYO Semiconductors
DATA SHEET

P-Channel Silicon MOSFET

2SJ646 — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		−8	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−32	A
Allowable Power Dissipation	P_D		1	W
		Tc=25°C	15	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}=0V	−30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−30V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−1.2		−2.6	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=−10V, I_D=−4A	3.3	5.5		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−4A, V_{GS}=−10V		58	75	mΩ
	R_{DS}(on)2	I_D=−2A, V_{GS}=−4.5V		97	136	mΩ
	R_{DS}(on)3	I_D=−2A, V_{GS}=−4V		110	154	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		510		pF
Output Capacitance	Coss	V_{DS}=−10V, f=1MHz		115		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−10V, f=1MHz		78		pF

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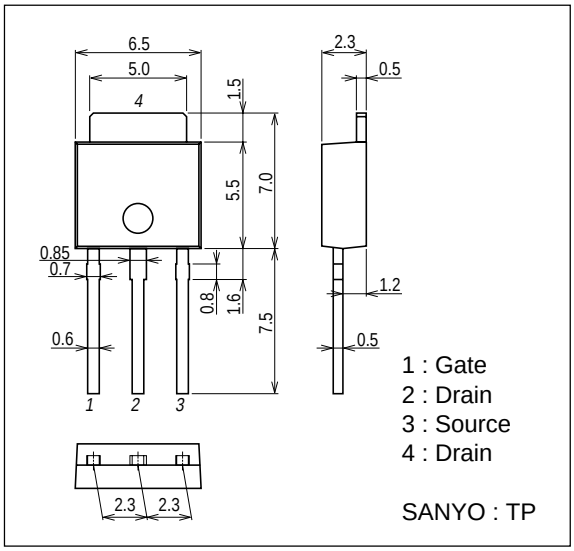
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		11		ns
Rise Time	t_r	See specified Test Circuit.		40		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		40		ns
Fall Time	t_f	See specified Test Circuit.		30		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−10V, I_D=−8A		11		nC
Gate-to-Source Charge	Qgs	V_{DS}=−10V, V_{GS}=−10V, I_D=−8A		2.4		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−10V, V_{GS}=−10V, I_D=−8A		1.7		nC
Diode Forward Voltage	V_{SD}	I_S=−8A, V_{GS}=0V		−1.0	−1.2	V

Package Dimensions

unit : mm

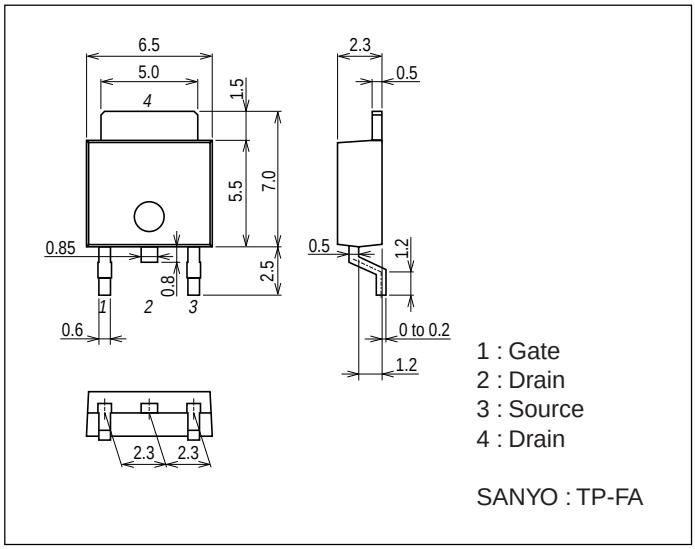
7518-004



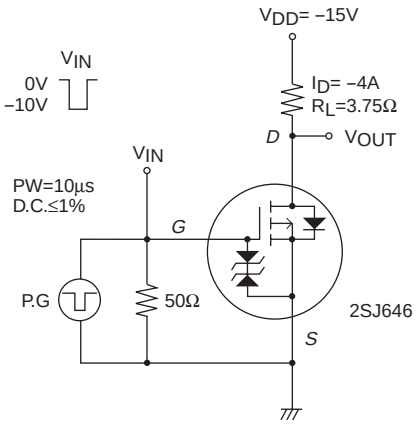
Package Dimensions

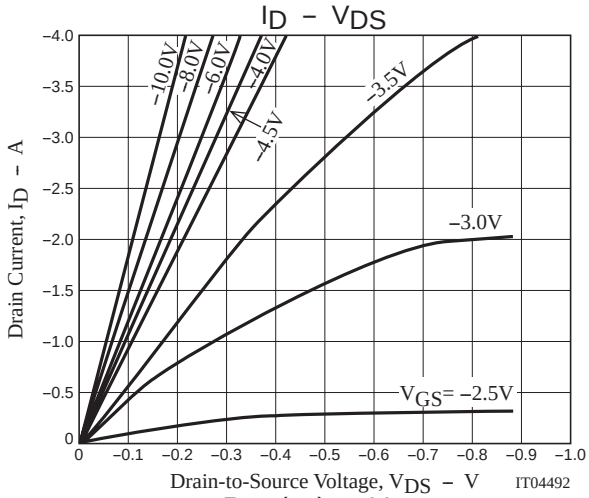
unit : mm

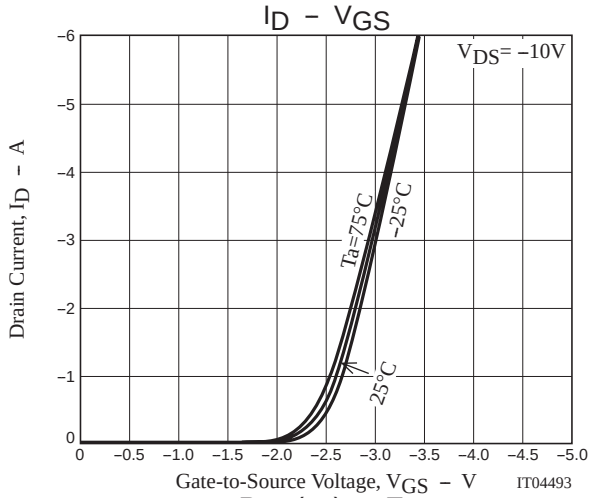
7003-004

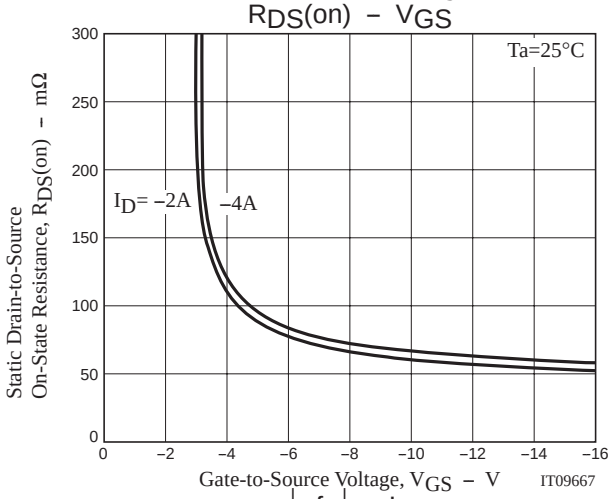


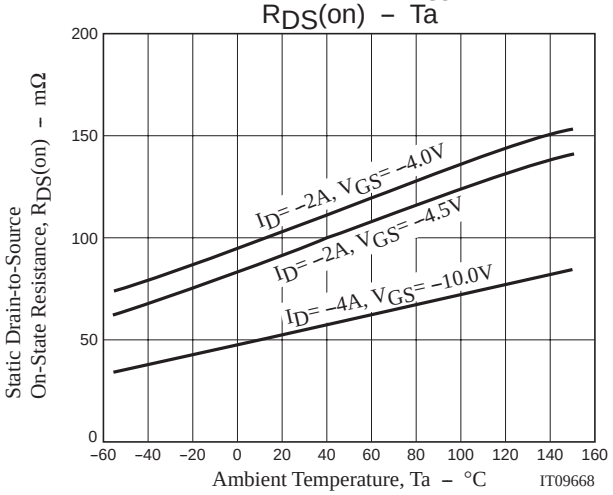
Switching Time Test Circuit

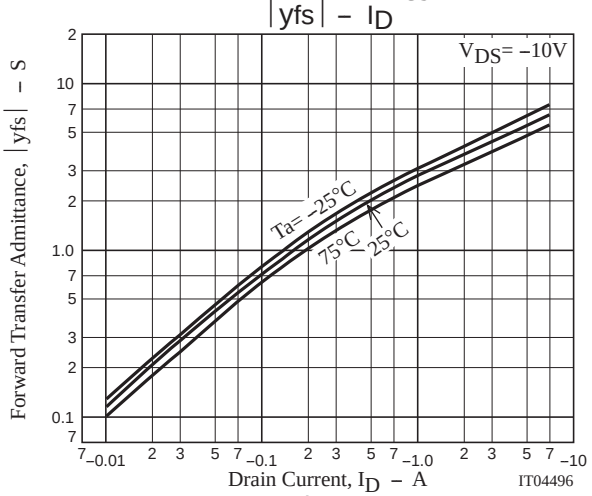


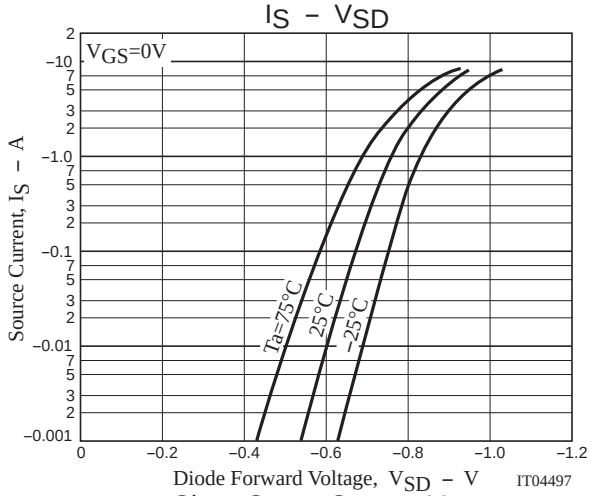

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT04492
–10.0V
–8.0V
–6.0V
–4.0V
–4.5V
–3.5V
–3.0V
VGS= –2.5V

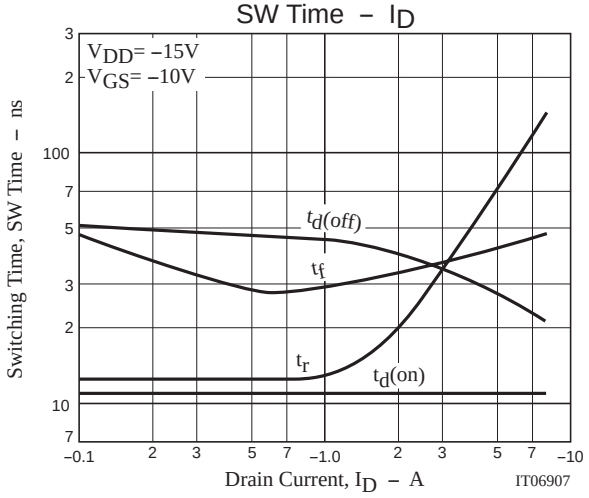

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT04493
VDS= –10V
Ta=75°C
–25°C
25°C

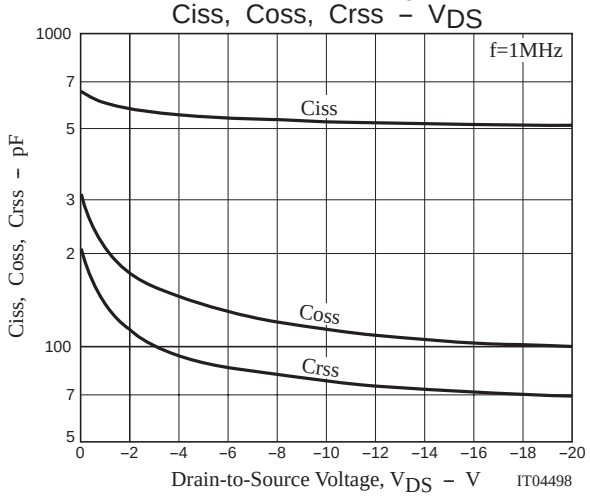

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT09667
Ta=25°C
ID= –2A
–4A

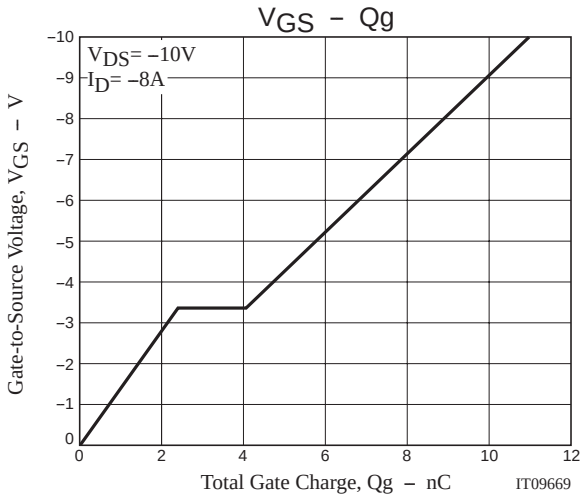

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT09668
ID= –2A, VGS= –4.0V
ID= –2A, VGS= –4.5V
ID= –4A, VGS= –10.0V

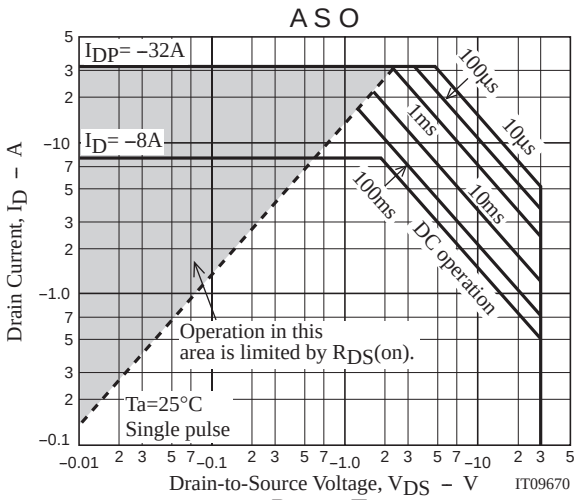

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT04496
VDS= –10V
Ta= –25°C
75°C
25°C

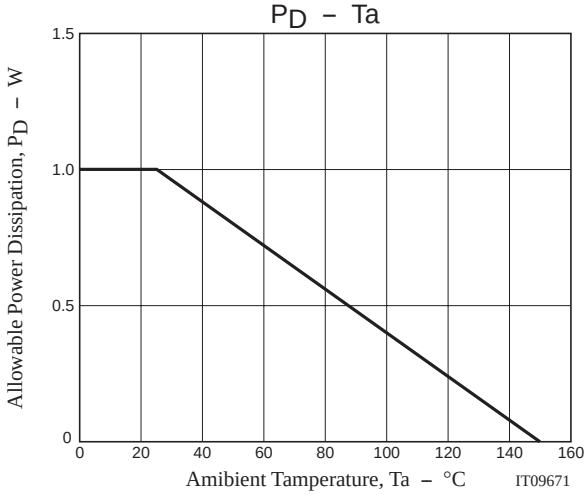

IS – VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT04497
VGS=0V
Ta=75°C
25°C
–25°C

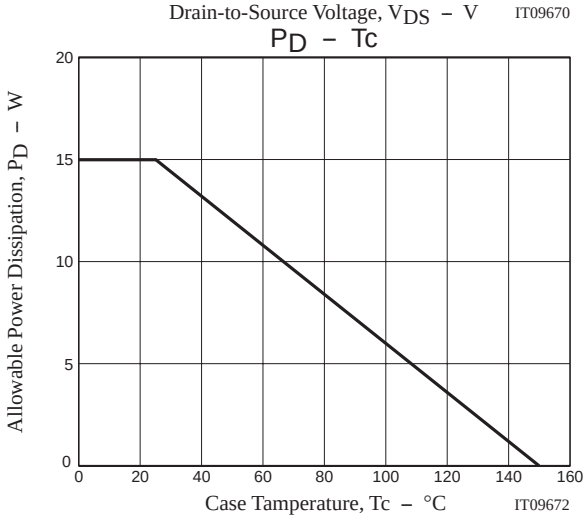

SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT06907
VDD= –15V
VGS= –10V
td(off)
tf
tr
td(on)


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT04498
f=1MHz
Ciss
Coss
Crss









Note on usage : Since the 2SJ646 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.