



ON Semiconductor®

ON Semiconductor
DATA SHEET**2SJ646** — P-Channel Silicon MOSFET
General-Purpose Switching Device
Applications**Features**

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

Specifications**Absolute Maximum Ratings** at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		-30	V
Gate-to-Source Voltage	V_{GS}		± 20	V
Drain Current (DC)	I_D		-8	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	-32	A
Allowable Power Dissipation	P_D		1	W
		$T_c=25^\circ\text{C}$	15	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1\text{mA}$, $V_{GS}=0\text{V}$	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30\text{V}$, $V_{GS}=0\text{V}$			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10\text{V}$, $I_D=-1\text{mA}$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10\text{V}$, $I_D=-4\text{A}$	3.3	5.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-4\text{A}$, $V_{GS}=-10\text{V}$		58	75	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=-2\text{A}$, $V_{GS}=-4.5\text{V}$		97	136	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=-2\text{A}$, $V_{GS}=-4\text{V}$		110	154	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=-10\text{V}$, $f=1\text{MHz}$		510		pF
Output Capacitance	C_{oss}	$V_{DS}=-10\text{V}$, $f=1\text{MHz}$		115		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=-10\text{V}$, $f=1\text{MHz}$		78		pF

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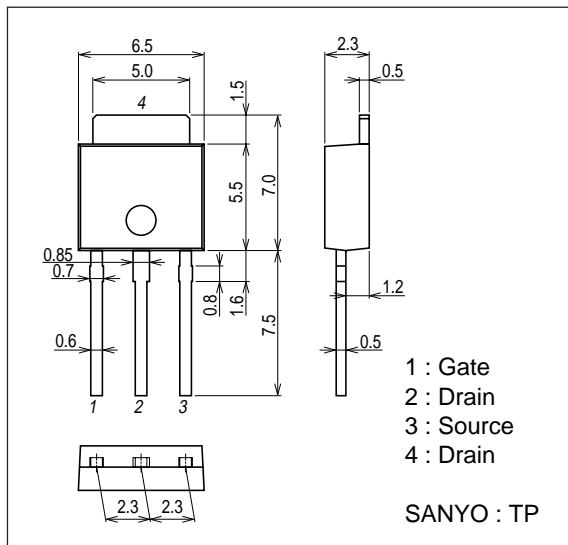
2SJ646

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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	Q_g	$V_{DS}=-10V, V_{GS}=-10V, I_D=-8A$		11		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=-10V, V_{GS}=-10V, I_D=-8A$		2.4		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=-10V, V_{GS}=-10V, I_D=-8A$		1.7		nC
Diode Forward Voltage	V_{SD}	$I_S=-8A, V_{GS}=0V$		-1.0	-1.2	V

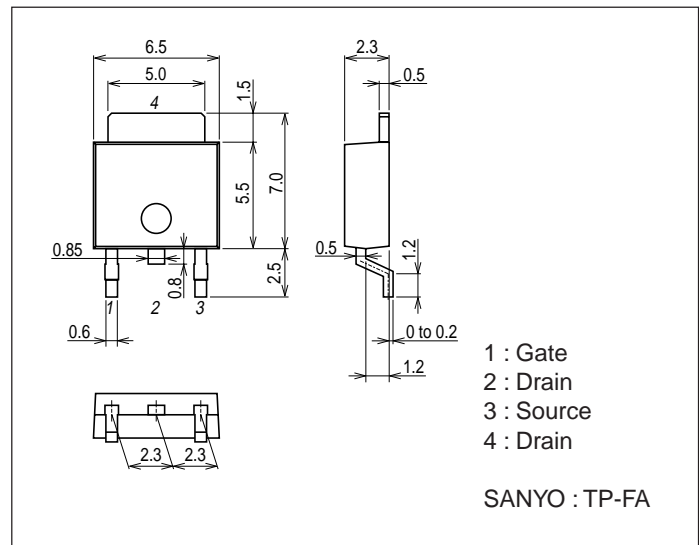
Package Dimensions

unit : mm
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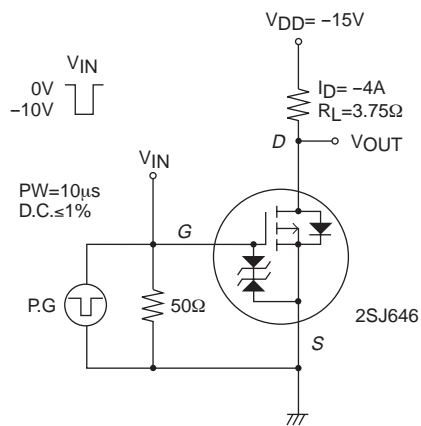


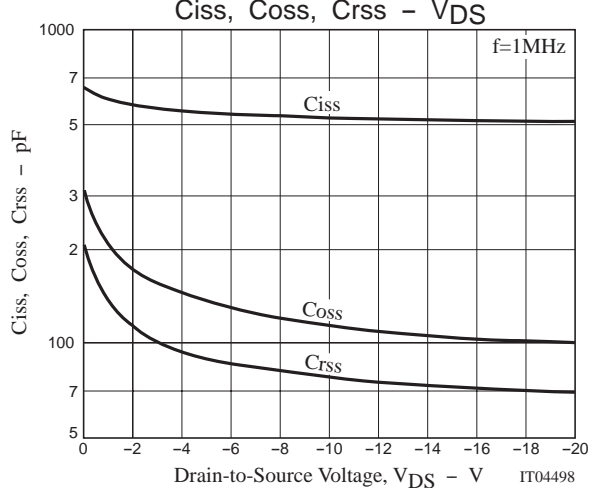
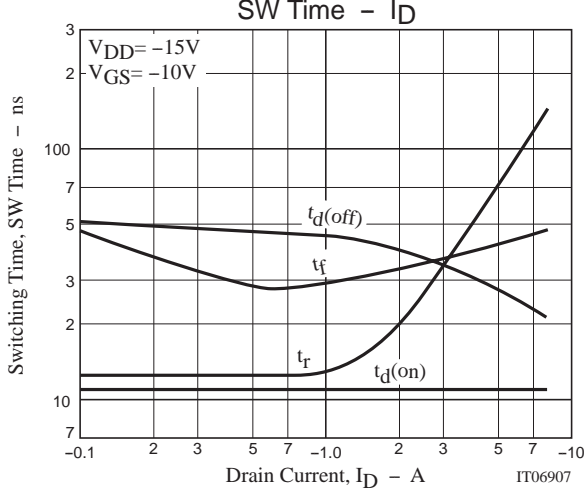
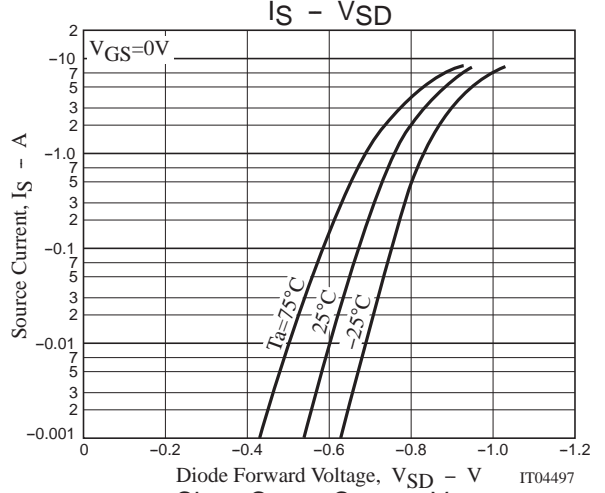
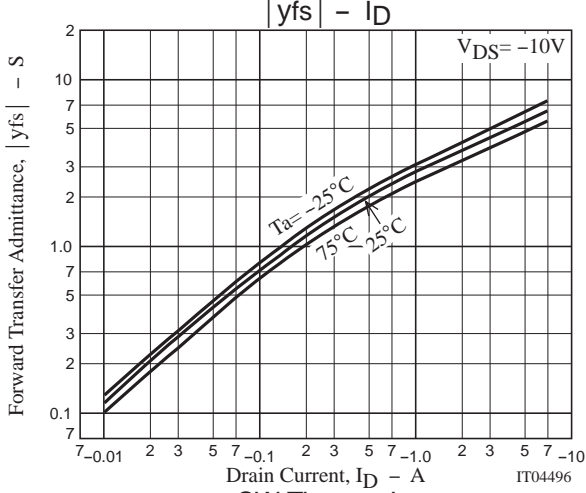
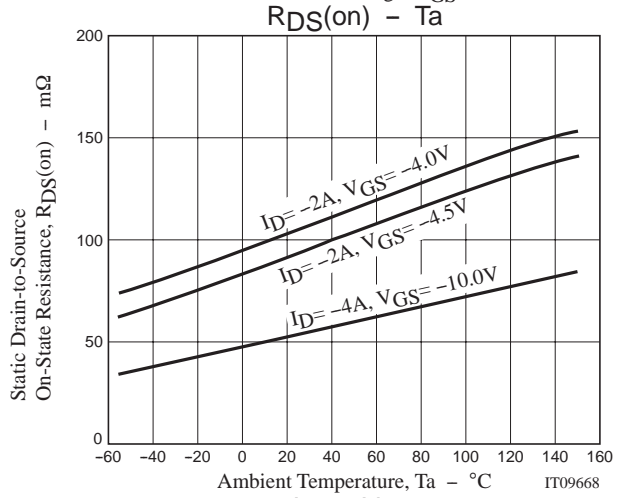
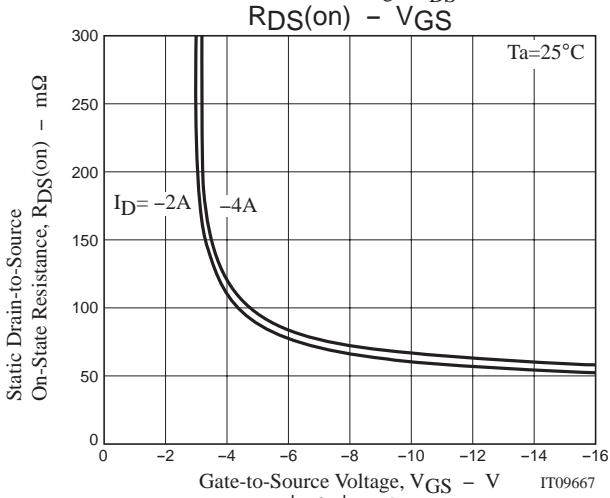
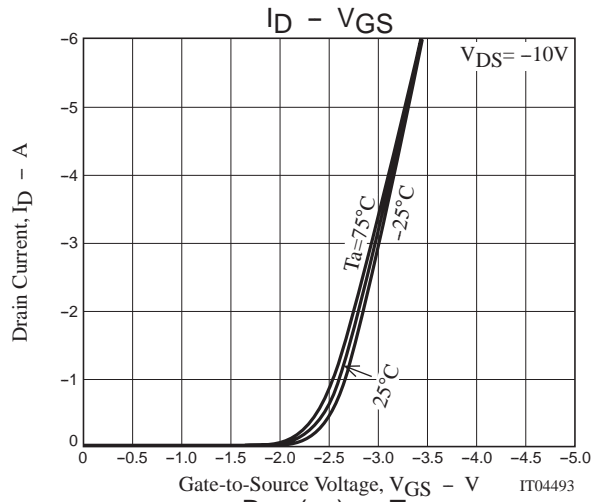
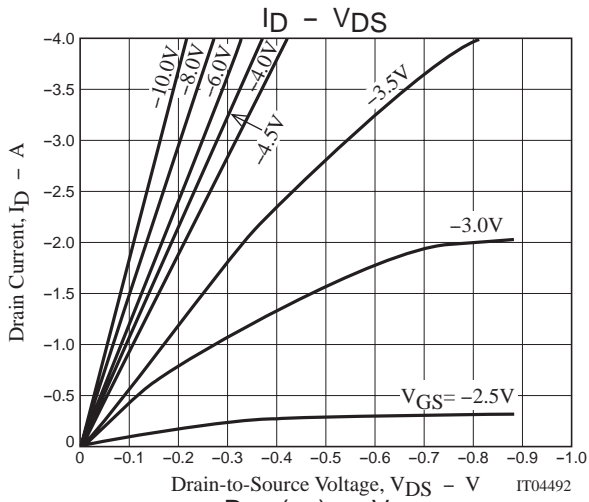
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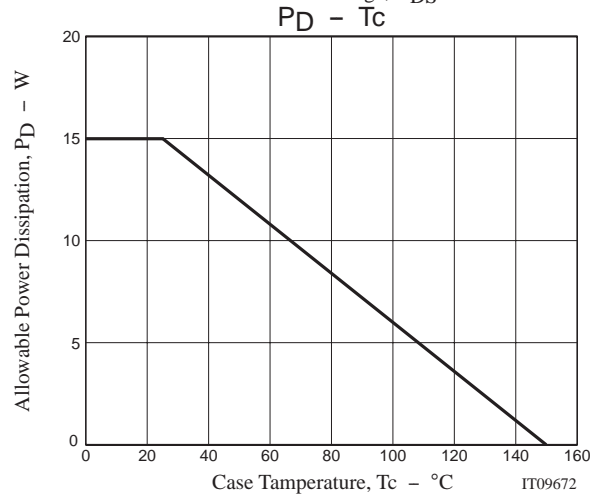
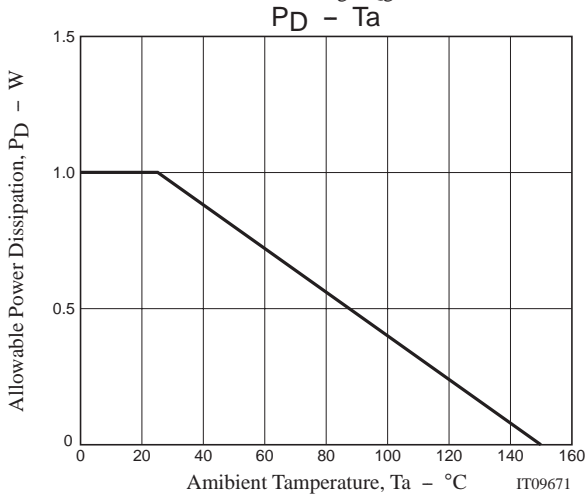
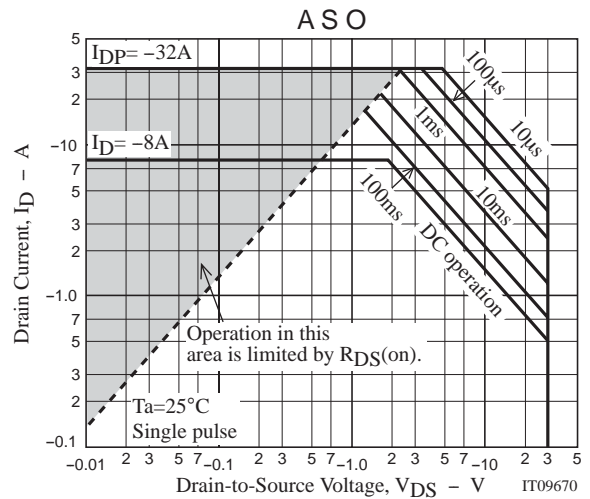
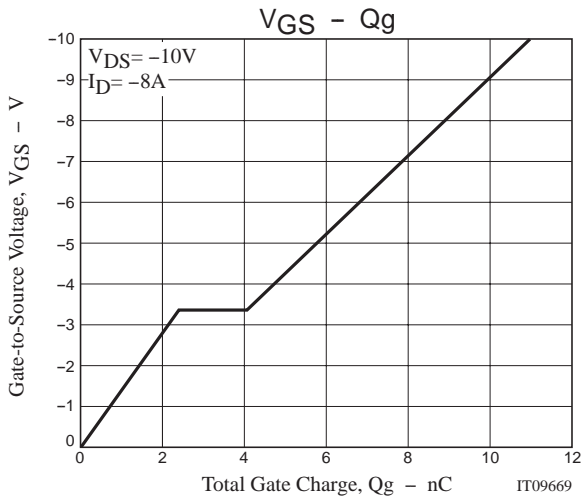
unit : mm
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Switching Time Test Circuit







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