

**2SJ658**

High-Speed Switching Applications

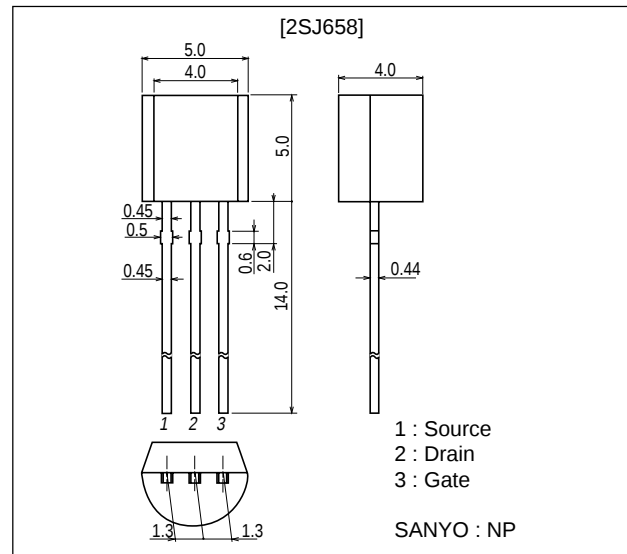
Features

- Low ON-resistance.
- High-speed switching.
- 2.5V drive.

Package Dimensions

unit : mm

2178



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		-20	V
Gate-to-Source Voltage	V_{GS}		± 10	V
Drain Current (DC)	I_D		-2	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	-8	A
Allowable Power Dissipation	P_D		0.7	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	$V_{(BR)DSS}$	$I_D = -1\text{mA}$, $V_{GS} = 0$	-20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20\text{V}$, $V_{GS} = 0$			-10	μA

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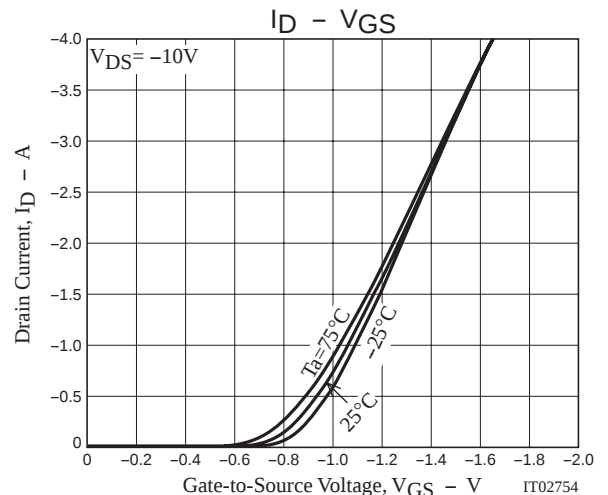
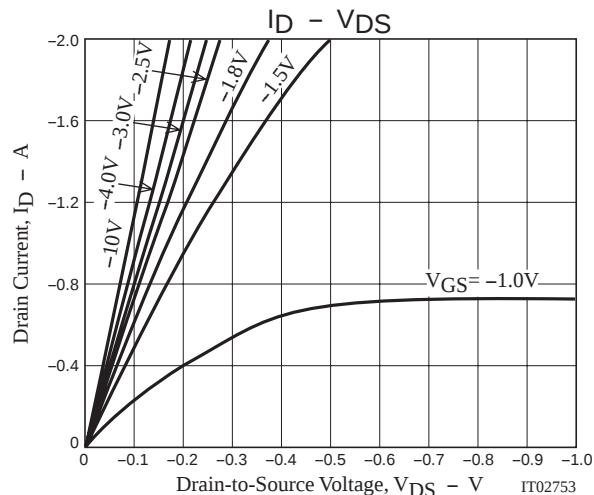
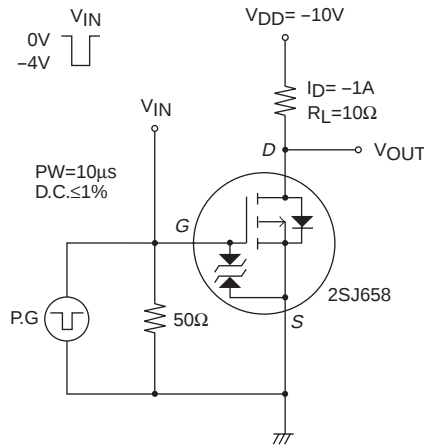
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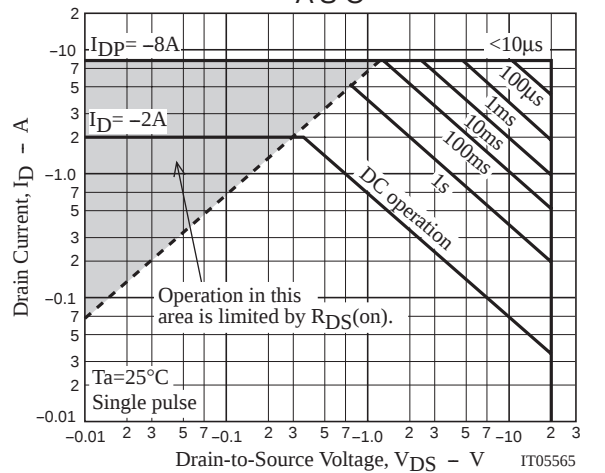
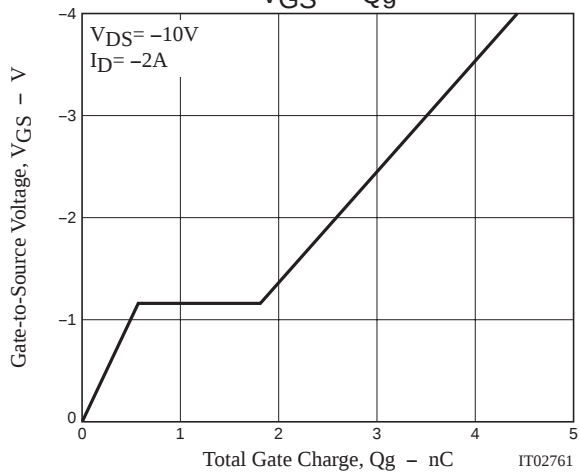
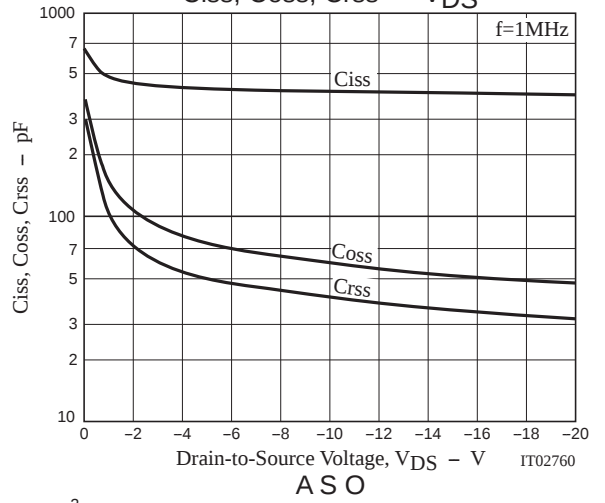
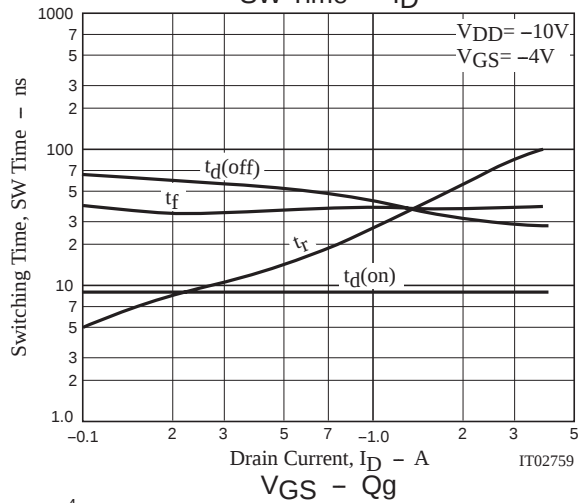
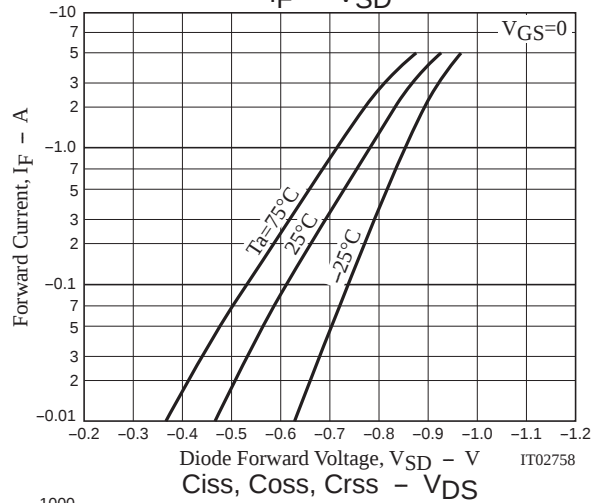
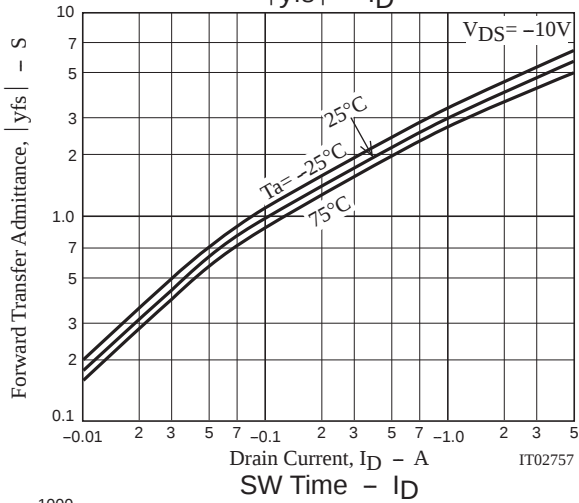
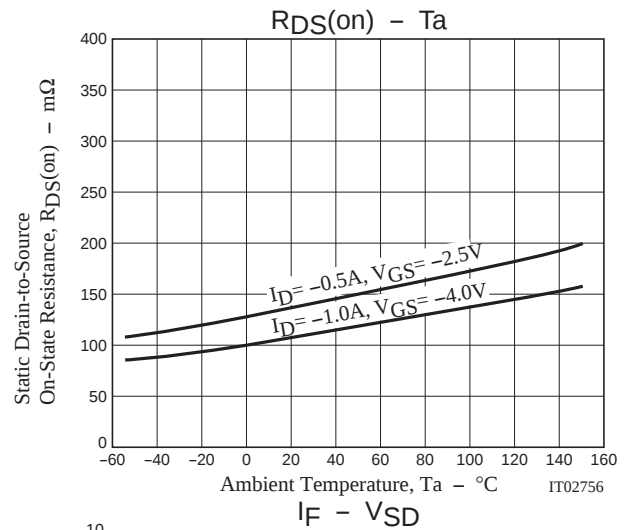
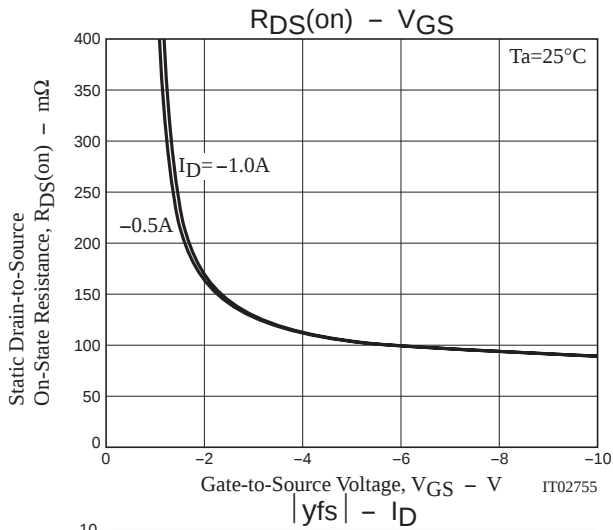
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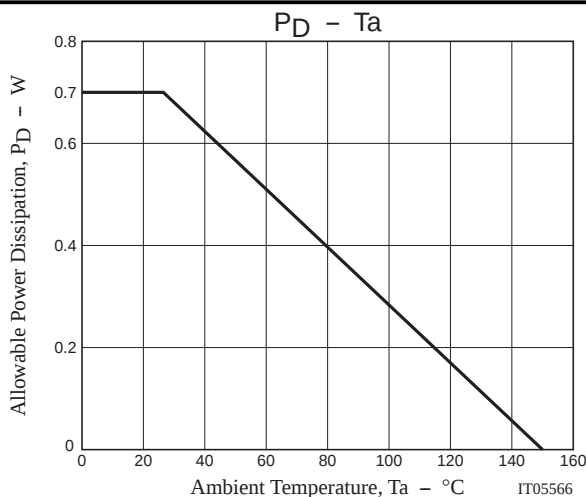
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-0.3		-1.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-1A$	1.8	3		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1A, V_{GS}=-4V$		115	150	$m\Omega$
	$R_{DS(on)2}$	$I_D=-0.5A, V_{GS}=-2.5V$		145	210	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=-10V, f=1MHz$		410		pF
Output Capacitance	C_{oss}	$V_{DS}=-10V, f=1MHz$		60		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=-10V, f=1MHz$		40		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		9		ns
Rise Time	t_r	See specified Test Circuit.		27		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		42		ns
Fall Time	t_f	See specified Test Circuit.		38		ns
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4V, I_D=-2A$		4.5		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=-10V, V_{GS}=-4V, I_D=-2A$		0.6		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=-10V, V_{GS}=-4V, I_D=-2A$		1.2		nC
Diode Forward Voltage	V_{SD}	$I_S=-2A, V_{GS}=0$		-0.9	-1.2	V

Switching Time Test Circuit







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