



2SK1691

Ultrahigh-Speed Switching Applications

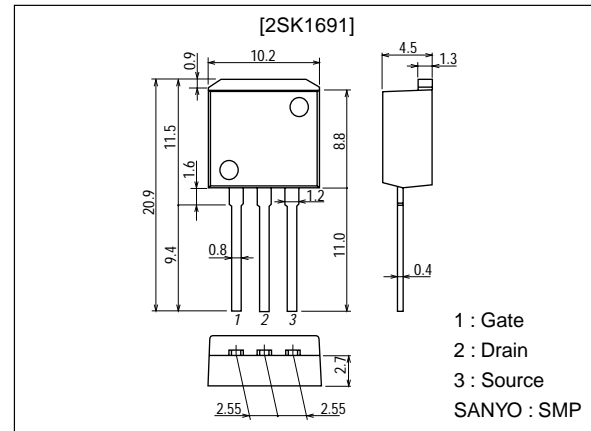
Features

- Low ON resistance.
- Ultrahigh-speed switching.

Package Dimensions

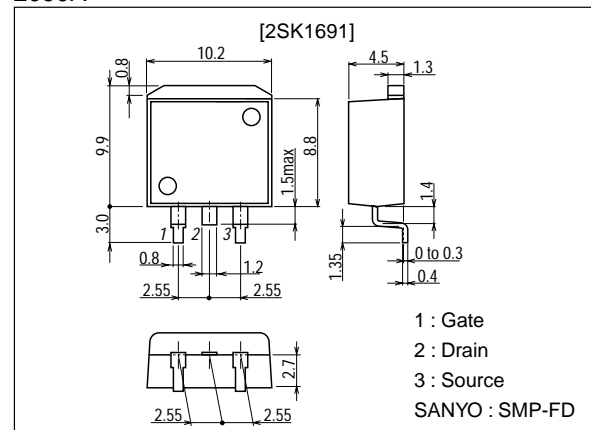
unit:mm

2093A



unit:mm

2090A



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Specifications

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

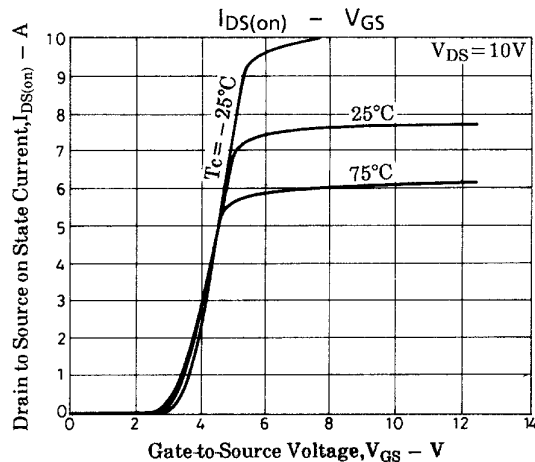
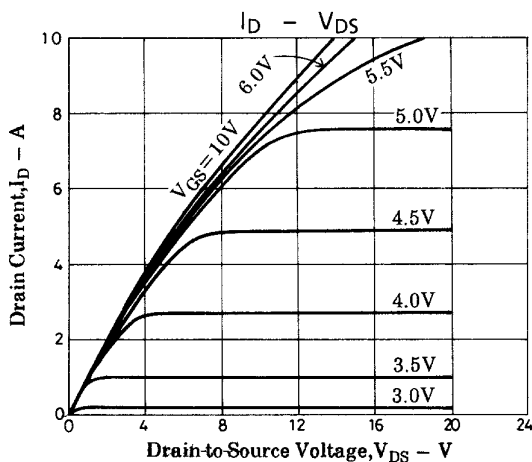
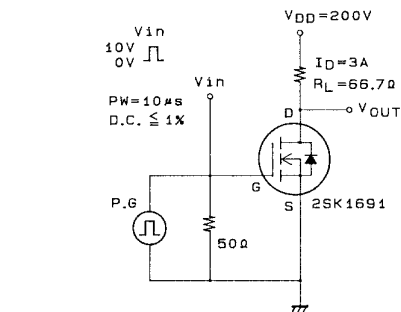
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		450	V
Gate-to-Source Voltage	V_{GSS}		± 30	V
Drain Current (DC)	I_{D}		5	A
Drain Current (pulse)	I_{DP}		20	A
Allowable Power Dissipation	P_{D}		1.65	W
		$T_c = 25^\circ\text{C}$	60	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to $+150$	$^\circ\text{C}$

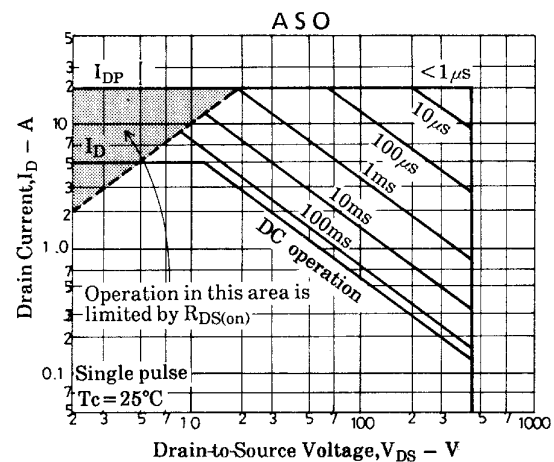
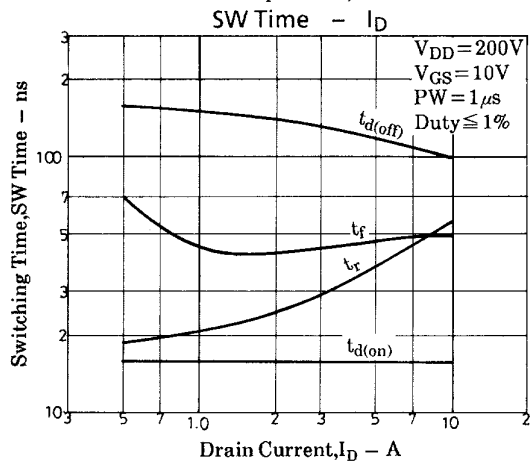
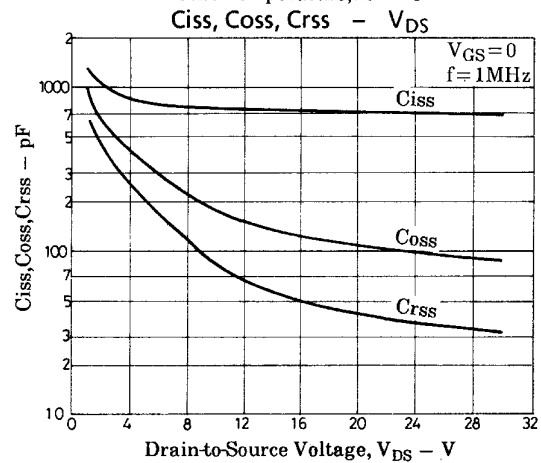
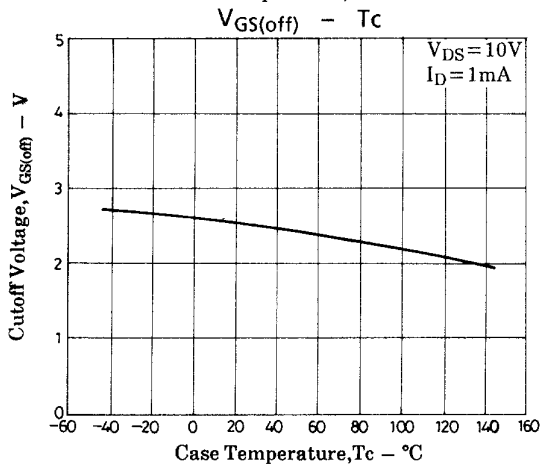
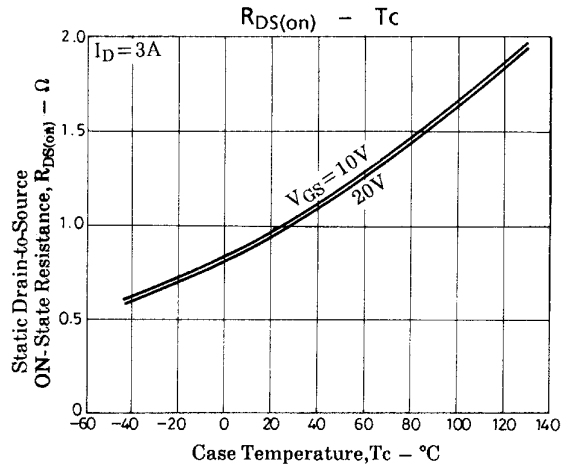
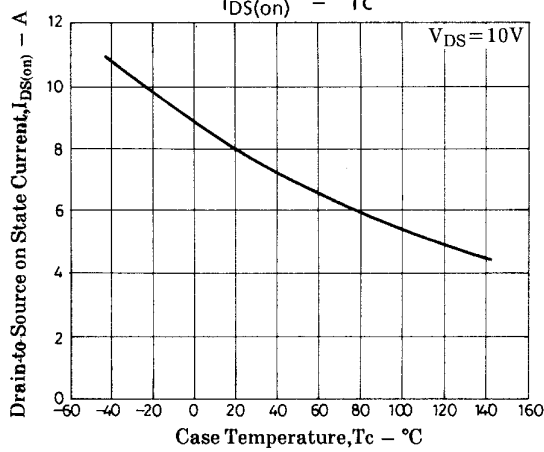
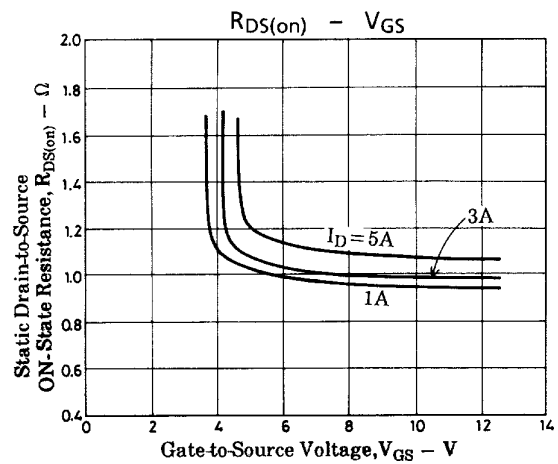
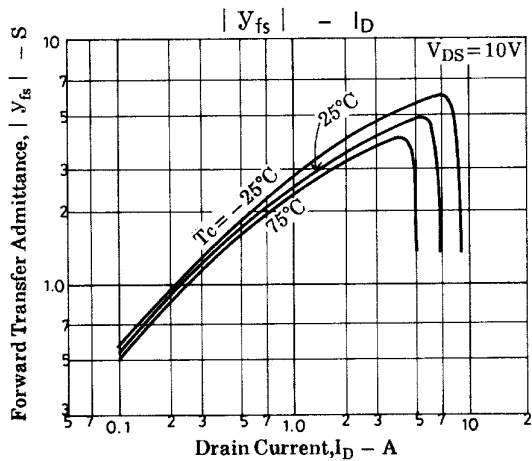
Electrical Characteristics at $T_a = 25^\circ\text{C}$

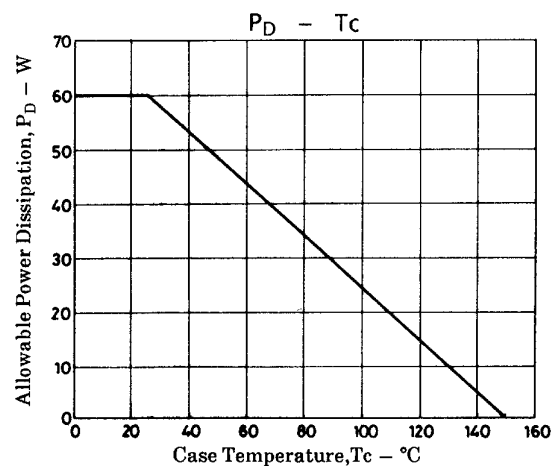
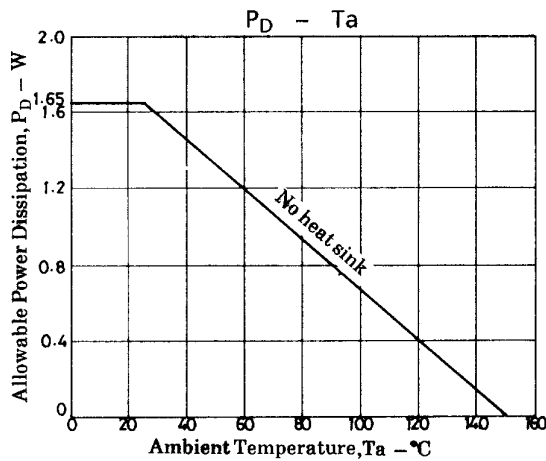
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{\text{(BR)DSS}}$	$I_{\text{D}} = 1\text{mA}$, $V_{\text{GS}} = 0$	450			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}} = 450\text{V}$, $V_{\text{GS}} = 0$			1.0	mA
Gate-to-Source Leakage Current	I_{GSS}	$V_{\text{GS}} = \pm 30\text{V}$, $V_{\text{DS}} = 0$			± 100	nA
Cutoff Voltage	$V_{\text{GS(off)}}$	$V_{\text{DS}} = 10\text{V}$, $I_{\text{D}} = 1\text{mA}$	2.0		3.0	V
Forward Transfer Admittance	$ y_{\text{fs}} $	$V_{\text{DS}} = 10\text{V}$, $I_{\text{D}} = 3\text{A}$	2.0	4.0		S
Static Drain-to-Source On-State Resistance	$R_{\text{DS(on)}}$	$I_{\text{D}} = 3\text{A}$, $V_{\text{GS}} = 10\text{V}$		1.0	1.4	Ω
Input Capacitance	C_{iss}	$V_{\text{DS}} = 20\text{V}$, $f = 1\text{MHz}$		700		pF
Output Capacitance	C_{oss}	$V_{\text{DS}} = 20\text{V}$, $f = 1\text{MHz}$		100		pF
Reverse Transfer Capacitance	C_{rss}	$V_{\text{DS}} = 20\text{V}$, $f = 1\text{MHz}$		40		pF
Turn-ON Delay Time	$t_{\text{d(on)}}$	See specified Test Circuit		15		ns
Rise Time	t_{r}	See specified Test Circuit		30		ns
Turn-OFF Delay Time	$t_{\text{d(off)}}$	See specified Test Circuit		130		ns
Fall Time	t_{f}	See specified Test Circuit		45		ns
Diode Forward Voltage	V_{SD}	$I_{\text{S}} = 3\text{A}$, $V_{\text{GS}} = 0$			1.8	V

(Note) Be careful in handling the 2SK1691 because it has no protection diode between gate and source.

Switching Time Test Circuit







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