



# 2SK2154

## Ultrahigh-Speed Switching Applications

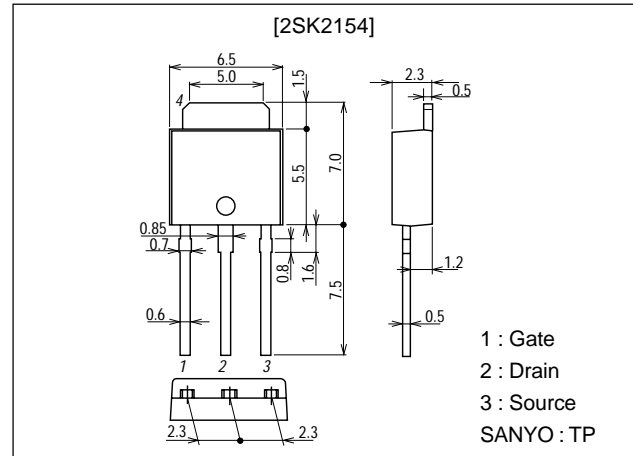
### Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.

### Package Dimensions

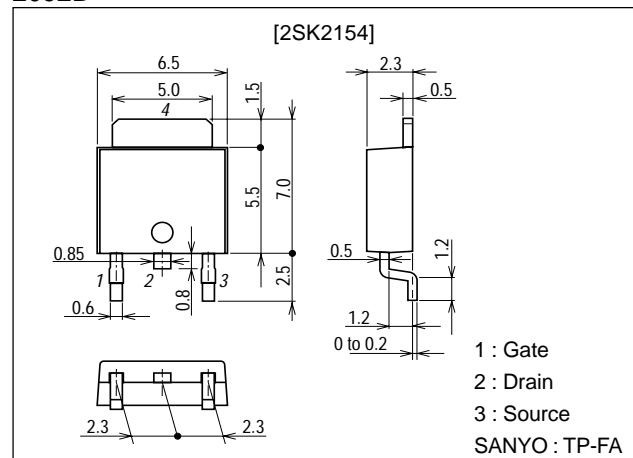
unit:mm

2083B



unit:mm

2092B



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## Specifications

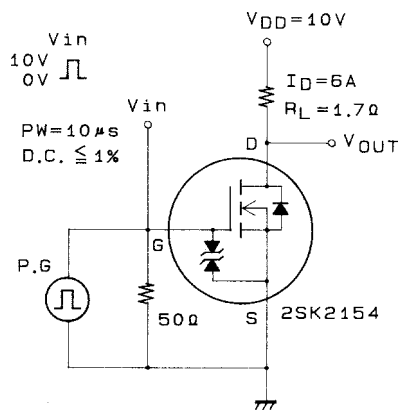
### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		20	V
Gate-to-Source Voltage	$V_{GSS}$		±18	V
Drain Current (DC)	$I_D$		12	A
Drain Current (pulse)	$I_{DP}$	$PW \leq 10 \mu s$ , duty cycle $\leq 1\%$	48	A
Allowable Power Dissipation	$P_D$	$T_c = 25^\circ C$	30	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

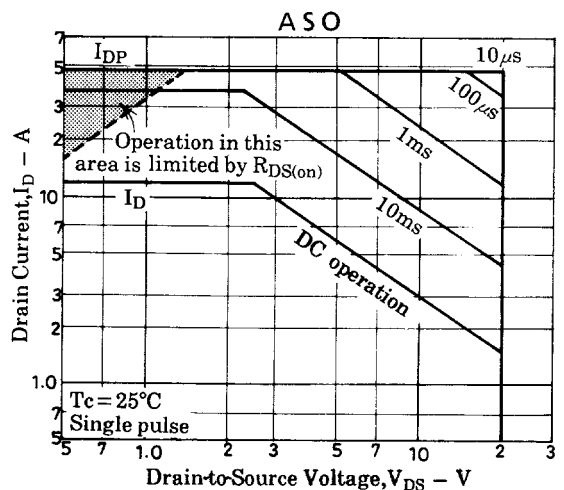
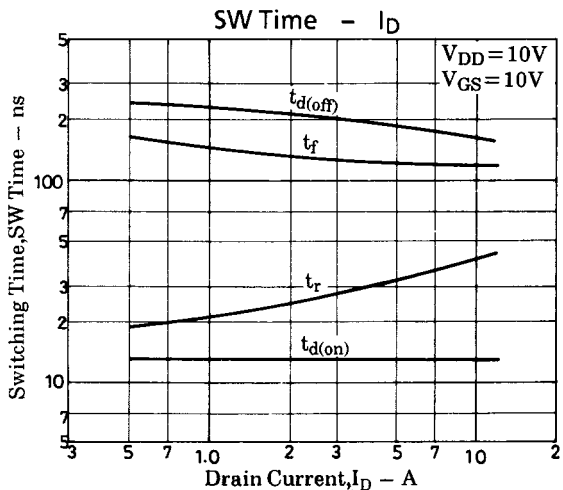
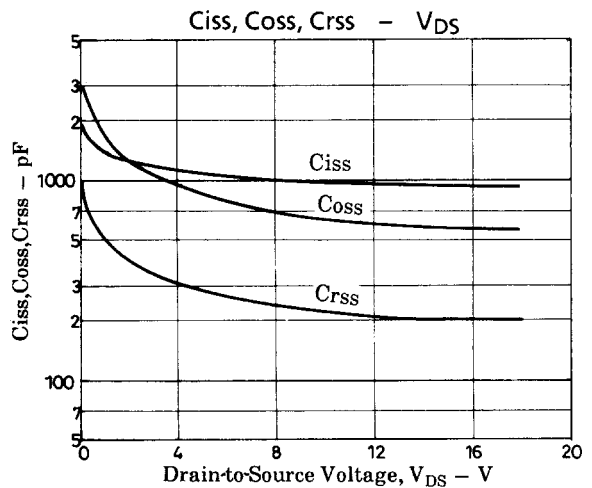
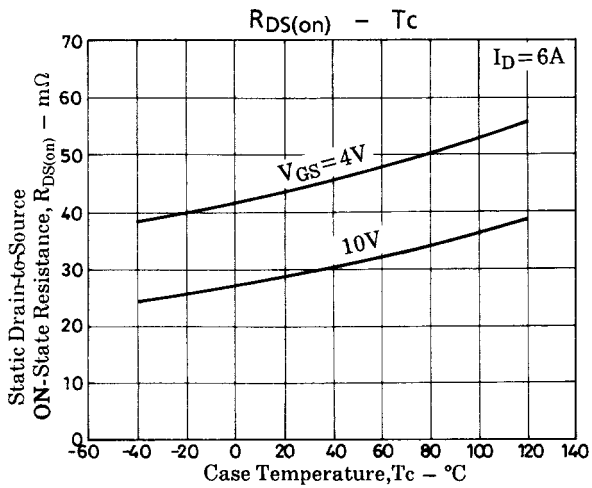
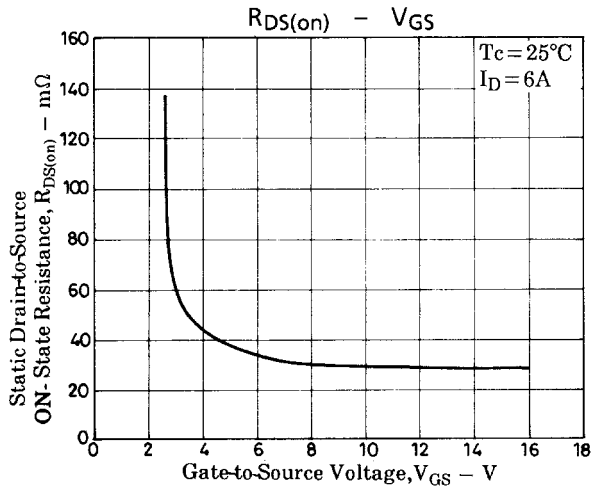
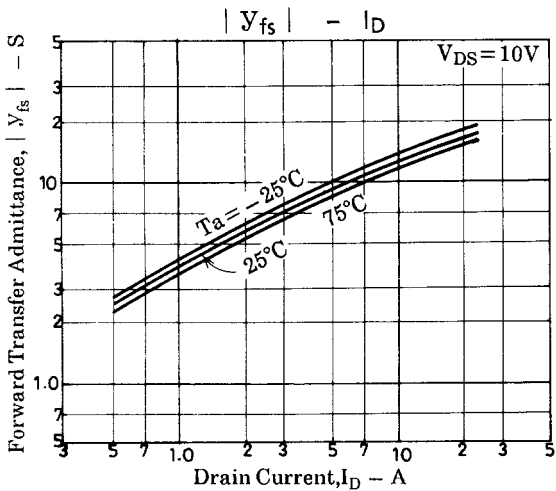
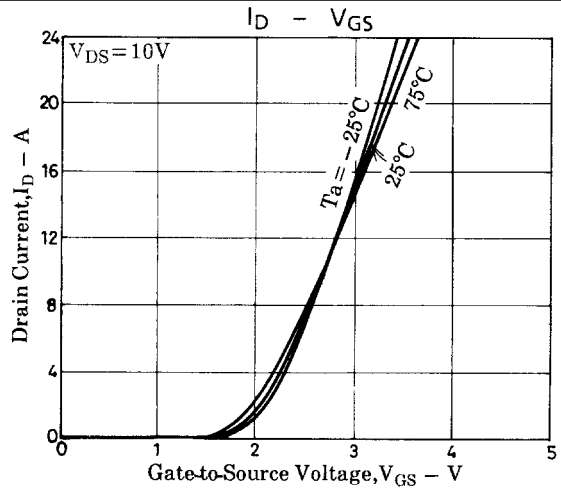
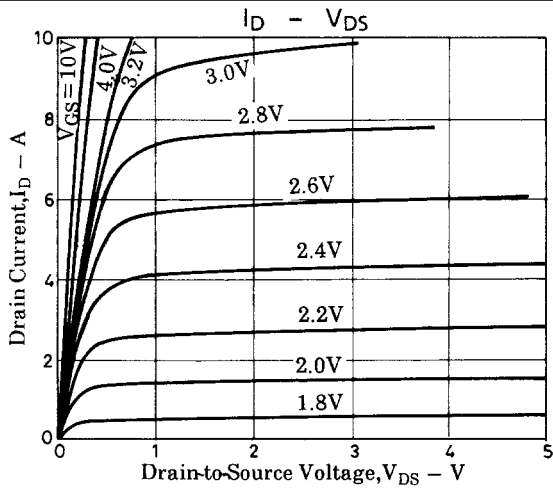
### Electrical Characteristics at Ta = 25°C

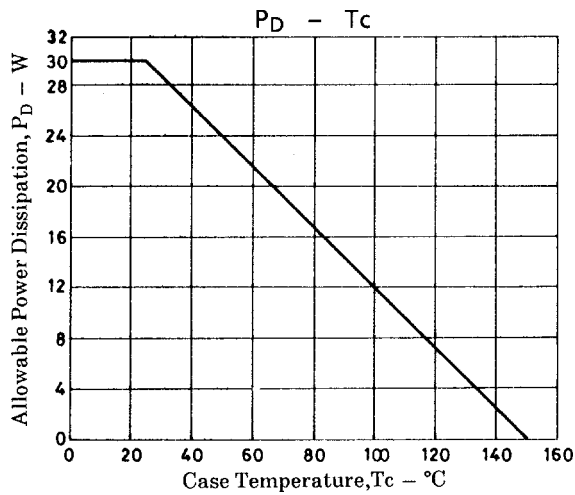
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1 mA$ , $V_{GS} = 0$	20			V
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$	±18			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20V$ , $V_{GS} = 0$			100	μA
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 12V$ , $V_{DS} = 0$			±10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10V$ , $I_D = 1mA$	0.8		2.0	V
Forward Transfer Admittance	yfs	$V_{DS} = 10V$ , $I_D = 6A$	7	10		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = 6A$ , $V_{GS} = 10V$		30	42	mΩ
	$R_{DS(on)2}$	$I_D = 6A$ , $V_{GS} = 4V$		45	58	mΩ
Input Capacitance	$C_{iss}$	$V_{DS} = 10V$ , $f = 1MHz$		1000		pF
Output Capacitance	$C_{oss}$	$V_{DS} = 10V$ , $f = 1MHz$		650		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 10V$ , $f = 1MHz$		220		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		13		ns
Rise Time	$t_r$	See specified Test Circuit		35		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		180		ns
Fall Time	$t_f$	See specified Test Circuit		120		ns
Diode Forward Voltage	$V_{SD}$	$I_S = 8A$ , $V_{GS} = 0$		1.0	1.5	V
Drain Current	$I_{DSX}$	$V_{DS} = 5V$ , $V_{GS} = 0.1V$			0.5	μA

### Switching Time Test Circuit



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