Ordering number:EN3833

N-Channel Silicon MOSFET

2SK1738

Ultrahigh-Speed Switching Applications

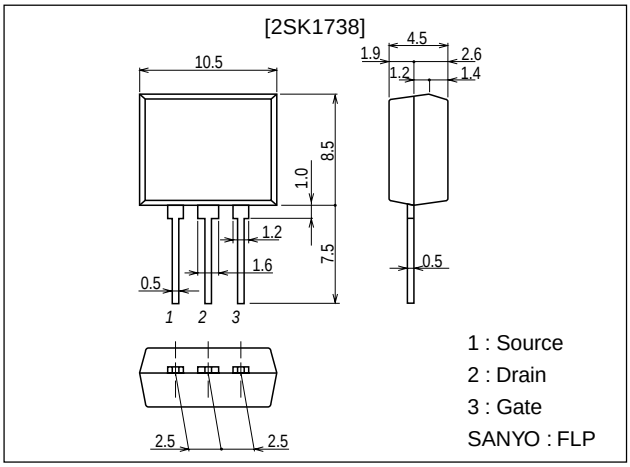
Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.
- Its height onboard is 9.5mm.
- Meets radial taping.

Package Dimensions

unit:mm

2085A



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		100	V
Gate-to-Source Voltage	V_{GSS}		±15	V
Drain Current (DC)	I_D		3	A
Drain Current (pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	12	A
Allowable Power Dissipation	P_D		1.5	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}=0	100			V
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G=±100μA, V_{DS}=0	±15			V
Zero-Gate Votlage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0			100	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	1.0		2.0	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=1.5A	3	5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}1$	I_D=1.5A, V_{GS}=10V		0.13	0.17	Ω
	$R_{DS(on)}2$	I_D=1.5A, V_{GS}=4V		0.17	0.22	Ω

Continued on next page.

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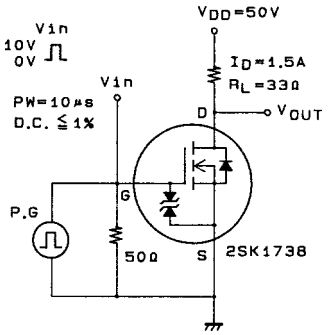
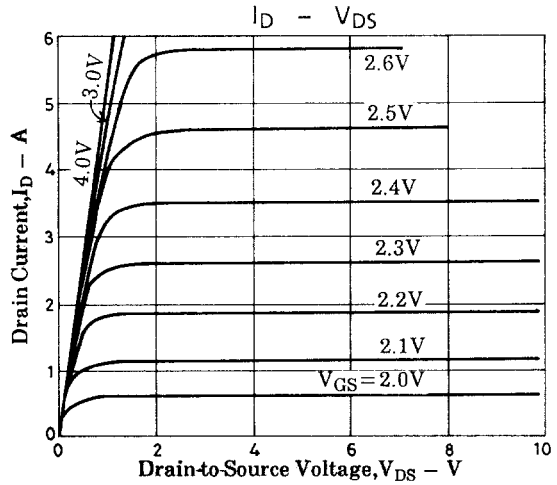
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

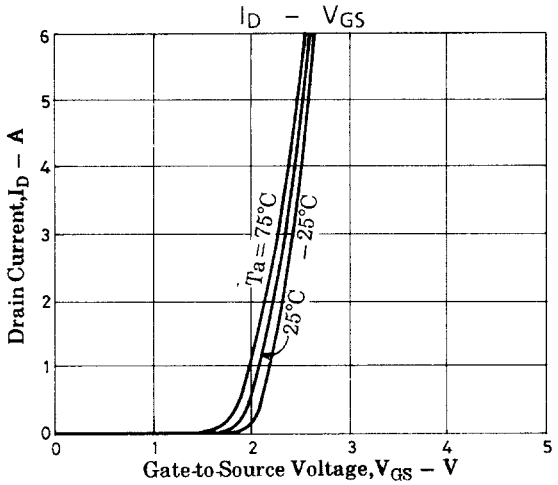
Continued from preceding page.

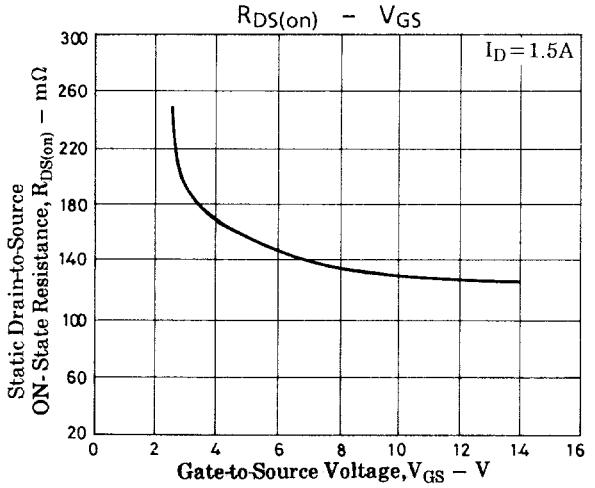
Parameter	Symbol	Conditions	Ratings			Unit
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		950		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		150		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		30		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		13		ns
Rise Time	t_r	See specified Test Circuit		18		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		100		ns
Fall Time	t_f	See specified Test Circuit		65		ns
Diode Forward Voltage	V_{SD}	I_S=3A, V_{GS}=0		1.0	1.5	V

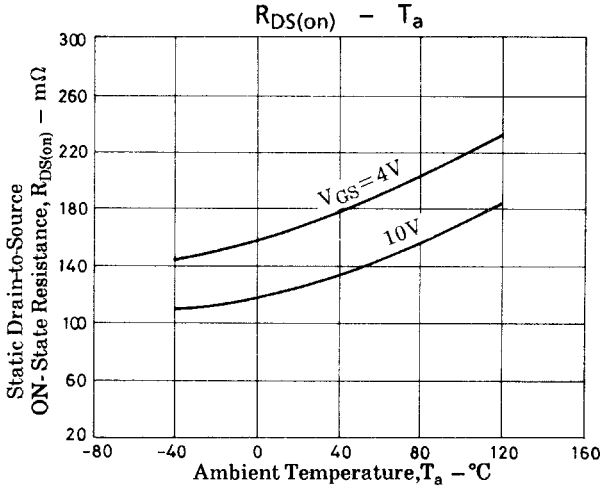
Switching Time Test Circuit

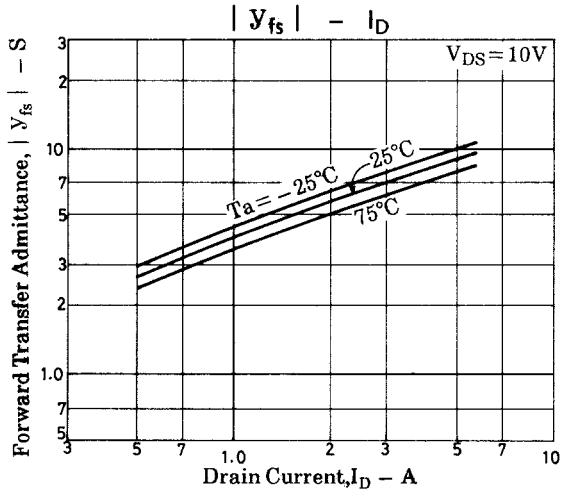


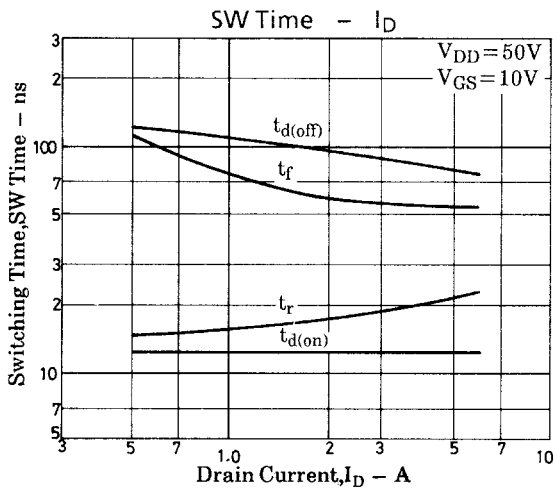


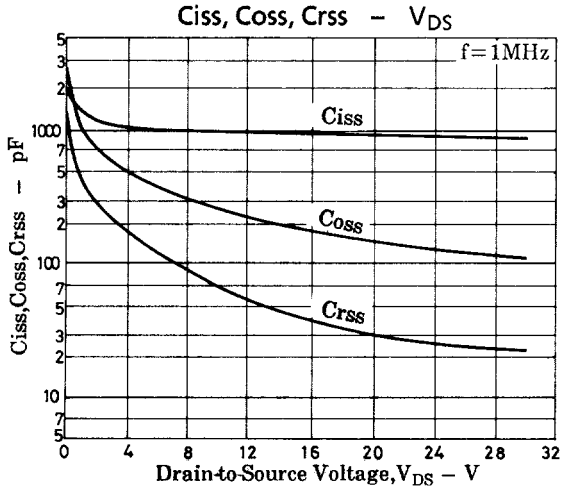


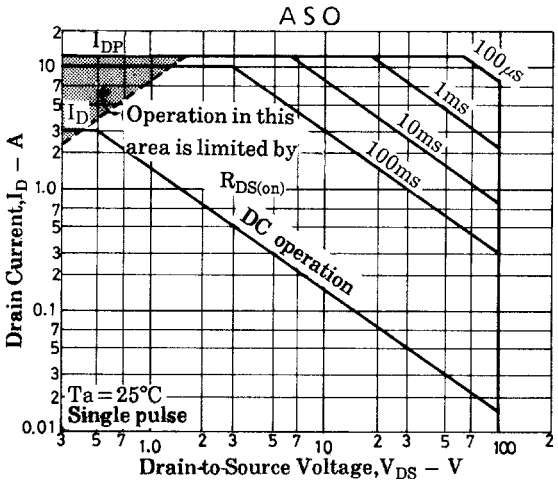


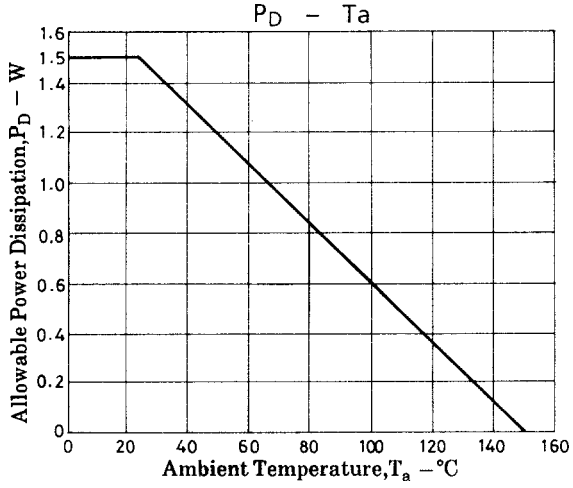



| yfs | – ID
VDS=10V
Ta=–25°C
25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A


SW Time – ID
VDD=50V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A


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


A S O
IDP
ID
Operation in this area is limited by RDS(on)
DC operation
100μs
1ms
10ms
100ms
Ta=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C