HITACHI

2SK1835

Silicon N Channel MOS FET

Application

High speed power switching

Features

- High breakdown voltage (V_{DSS} = 1500V)
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switchingregulator

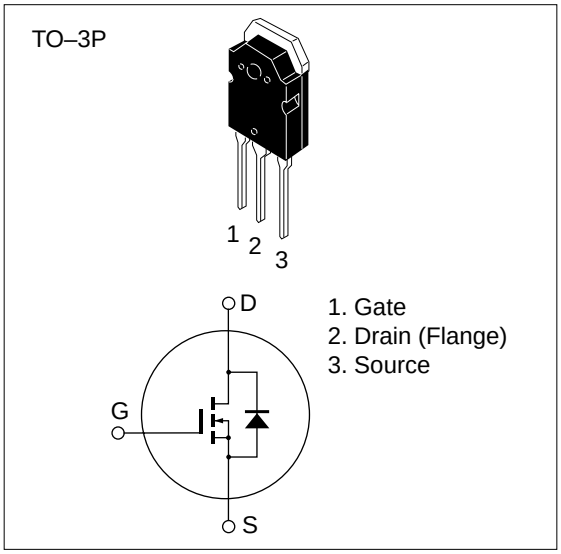


Table 1 Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	1500	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	4	A
Drain peak current	$I_{D(pulse)}$*	10	A
Body–drain diode reverse drain current	I_{DR}	4	A
Channel dissipation	Pch**	125	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

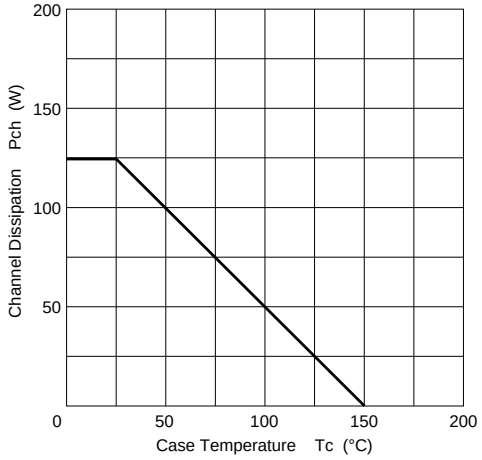
* PW ≤ 10 µs, duty cycle ≤ 1 %
** Value at Tc = 25 °C

Table 2 Electrical Characteristics (Ta = 25°C)

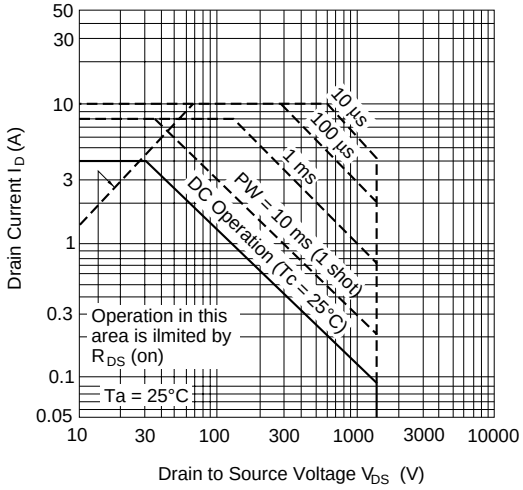
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	1500	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source leak current	I_{GSS}	—	—	±1	µA	V_{GS} = ±20 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	500	µA	V_{DS} = 1200 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	4.0	V	I_D = 1 mA, V_{DS} = 10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	4.6	7.0	Ω	I_D = 2 A V_{GS} = 15 V *
Forward transfer admittance	$\|y_{fs}\|$	0.9	1.4	—	S	I_D = 2 A V_{DS} = 20V *
Input capacitance	Ciss	—	1700	—	pF	V_{DS} = 10 V
Output capacitance	Coss	—	230	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	100	—	pF	f = 1 MHz
Turn–on delay time	$t_{d(on)}$	—	25	—	ns	I_D = 2A
Rise time	t_r	—	80	—	ns	V_{GS} = 10 V
Turn–off delay time	$t_{d(off)}$	—	230	—	ns	R_L = 15 Ω
Fall time	t_f	—	80	—	ns	
Body–drain diode forward voltage	V_{DF}	—	0.85	—	V	I_F = 4 A, V_{GS} = 0
Body–drain diode reverse recovery time	t_{rr}	—	2500	—	ns	I_F = 4 A, V_{GS} = 0, di_F / dt = 100 A / µs

* Pulse Test

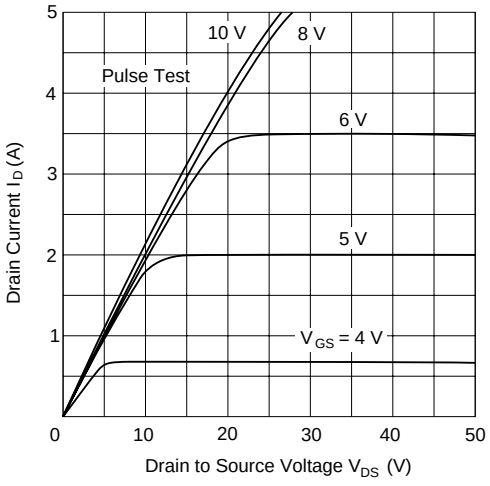
Power vs. Temperature Derating



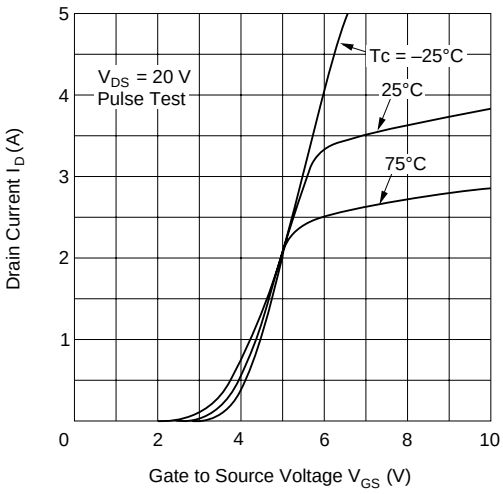
Maximum Safe Operation Area



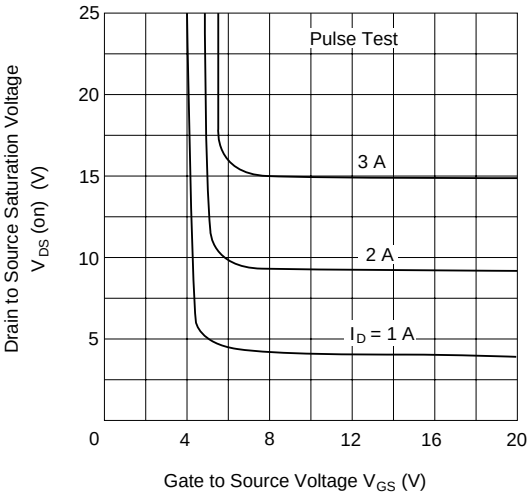
Typical Output Characteristics



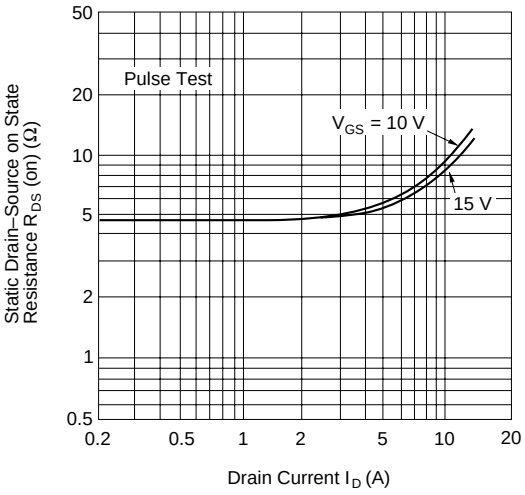
Typical Transfer Characteristics



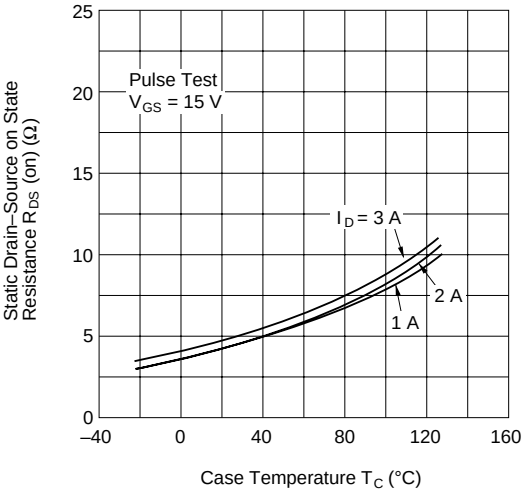
Drain-Source Saturation Voltage vs. Gate-Source Voltage



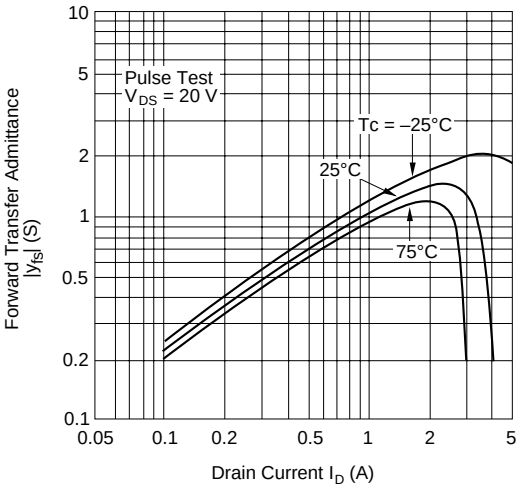
Static Drain-Source on State Resistance vs. Drain Current



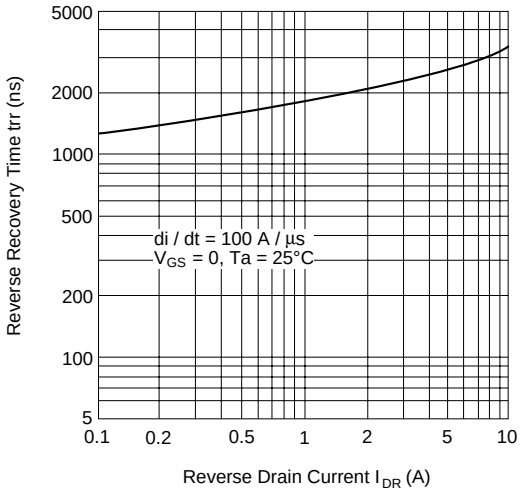
Static Drain-Source on State Resistance vs. Temperature



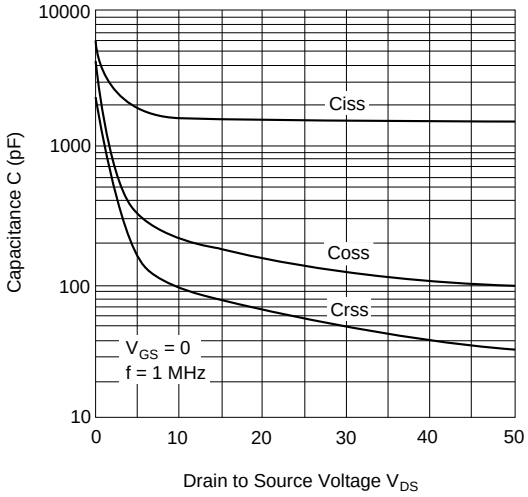
Forward Transfer Admittance vs. Drain Current



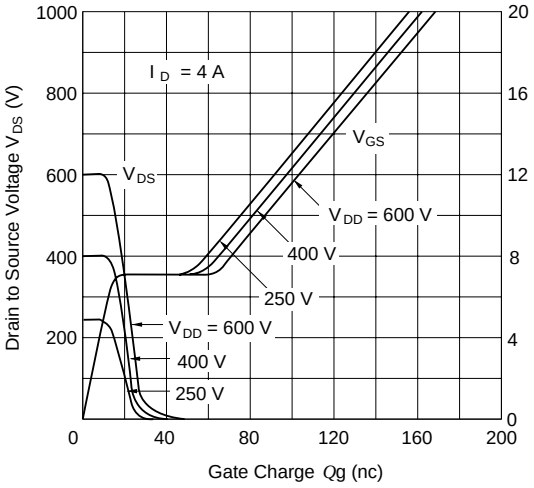
Body-Drain Diode Reverse Recovery Time



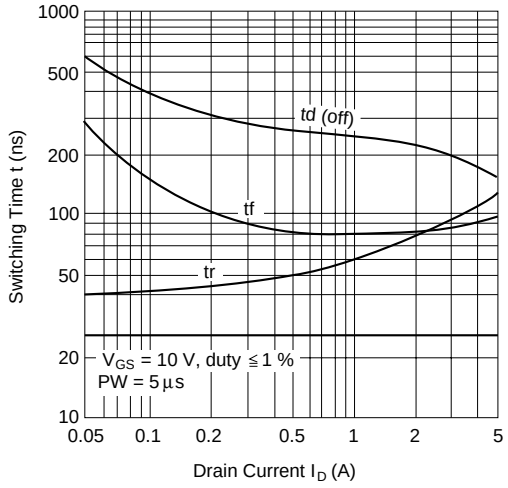
Typical Capacitance vs. Drain-Source Voltage



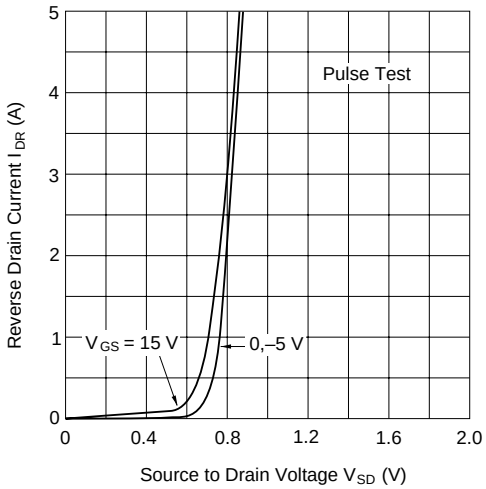
Dynamic Input Characteristics



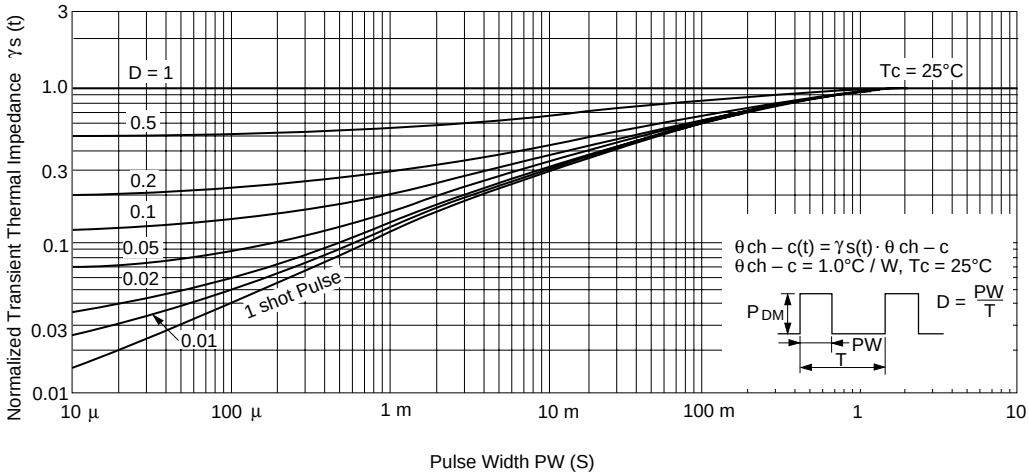
Switching Characteristics



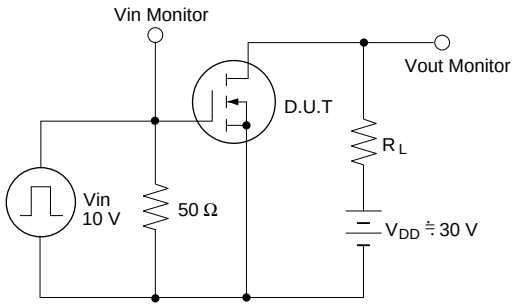
Reverse Drain Current vs.
Source to Drain Voltage



Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveforms