



2SK3831 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.
- Motor drive, DC / DC Converter.
- Avalanche resistance guarantee.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DSS}		60	V
Gate-to-Source Voltage	V _{GSS}		±20	V
Drain Current (DC)	I _D		85	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	340	A
Allowable Power Dissipation	P _D		2.5	W
		T _c =25°C	100	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E _{AS}		271	mJ
Avalanche Current *2	I _{AV}		85	A

*1. V_{DD}=20V, L=50μH, I_{AV}=85A

*2. L≤50μH, 1 Pulse

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	60			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	1.2		2.6	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =43A	30	50		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =43A, V _{GS} =10V		10	13	mΩ
	R _{DS(on)2}	I _D =43A, V _{GS} =4V		13	18	mΩ
Input Capacitance	C _{iss}	V _{DS} =20V, f=1MHz		5250		pF
Output Capacitance	C _{oss}	V _{DS} =20V, f=1MHz		780		pF
Reverse Transfer Capacitance	C _{rss}	V _{DS} =20V, f=1MHz		525		pF

Marking : K3831

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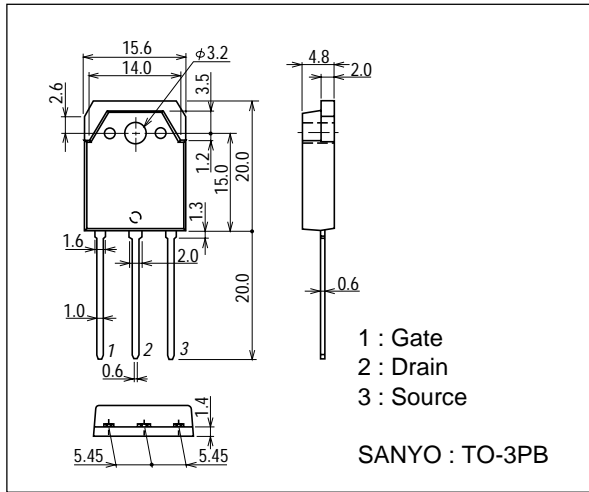
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		40		ns
Rise Time	t_r	See specified Test Circuit.		370		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		355		ns
Fall Time	t_f	See specified Test Circuit.		315		ns
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=10V, I_D=85A$		113		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=30V, V_{GS}=10V, I_D=85A$		19		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=30V, V_{GS}=10V, I_D=85A$		28		nC
Diode Forward Voltage	V_{SD}	$I_S=85A, V_{GS}=0$		1.18	1.5	V

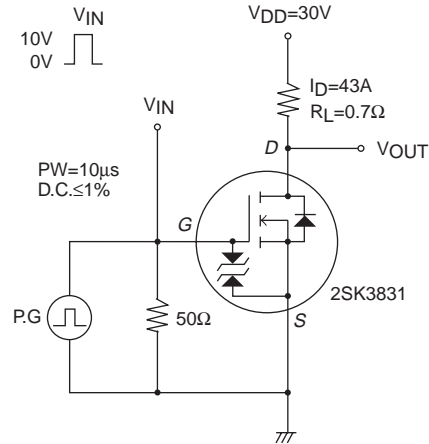
Package Dimensions

unit : mm

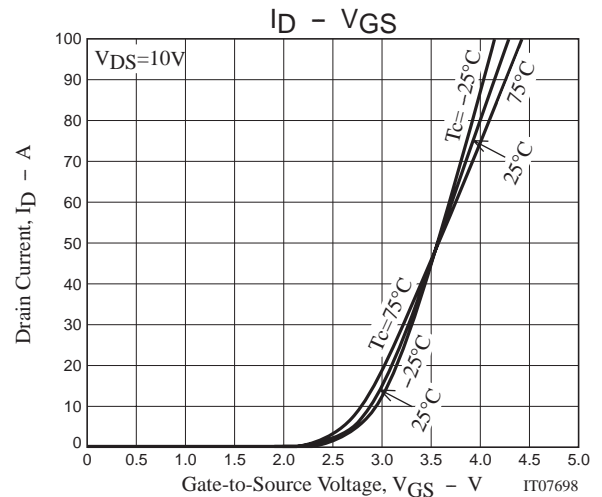
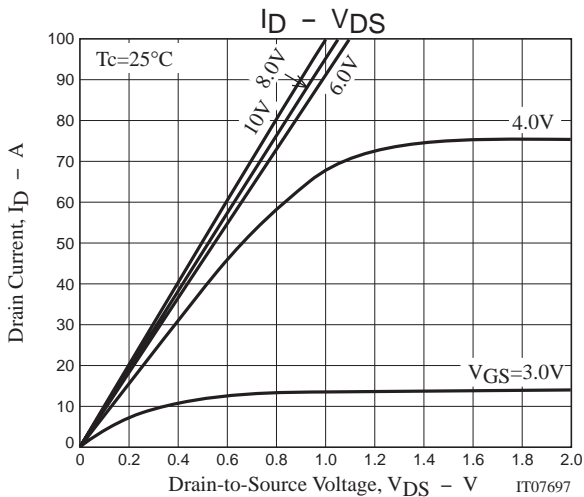
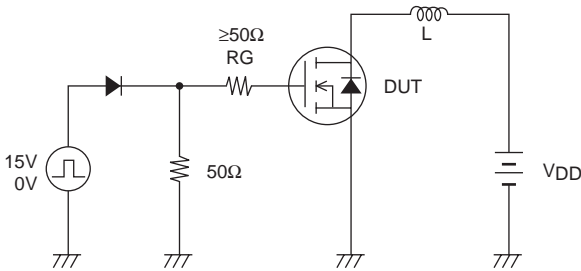
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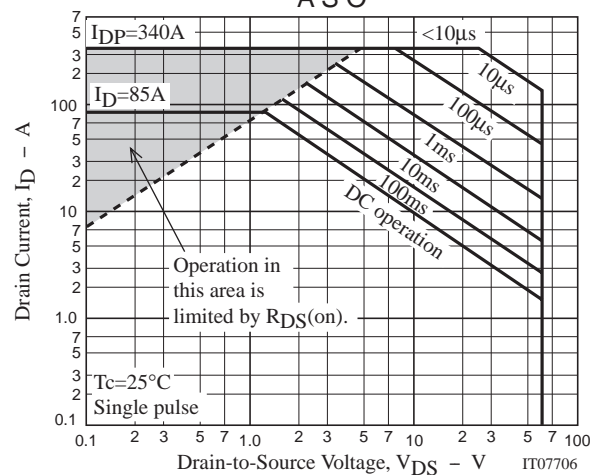
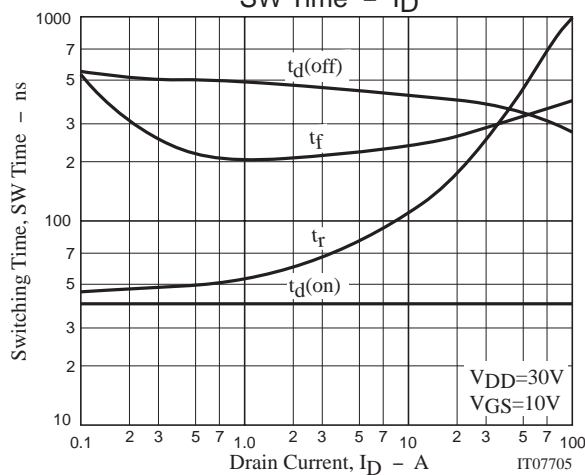
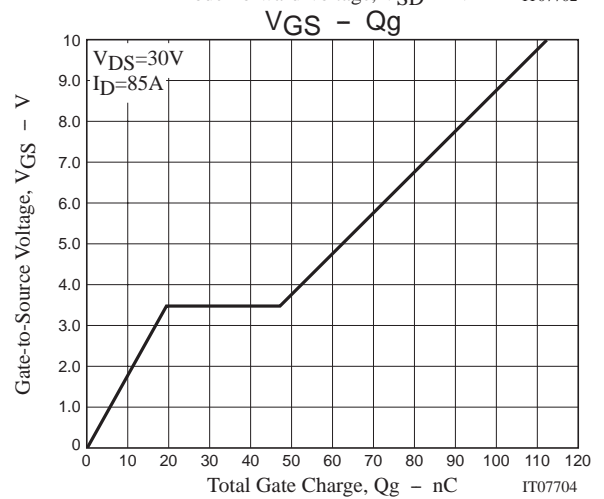
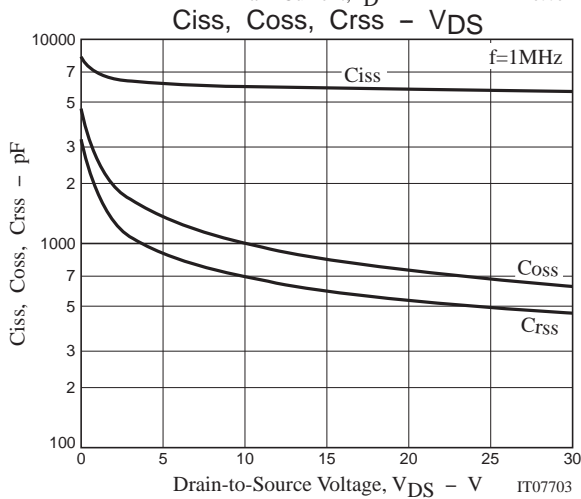
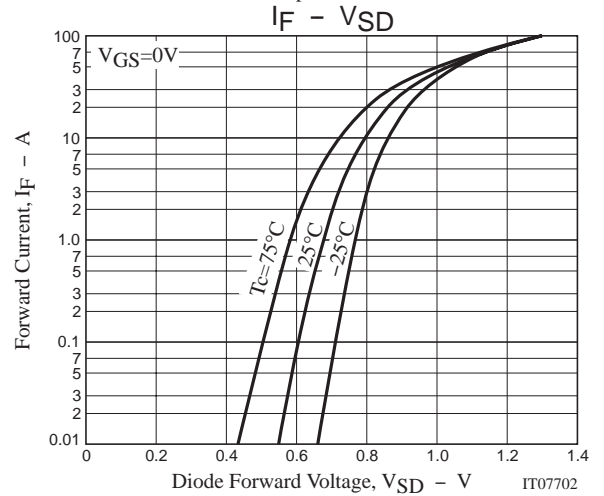
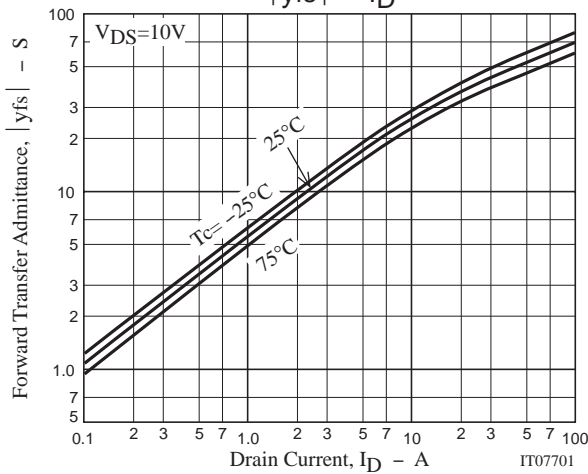
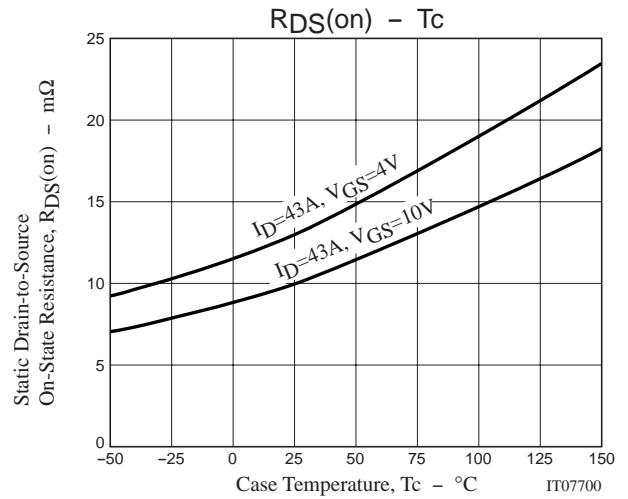
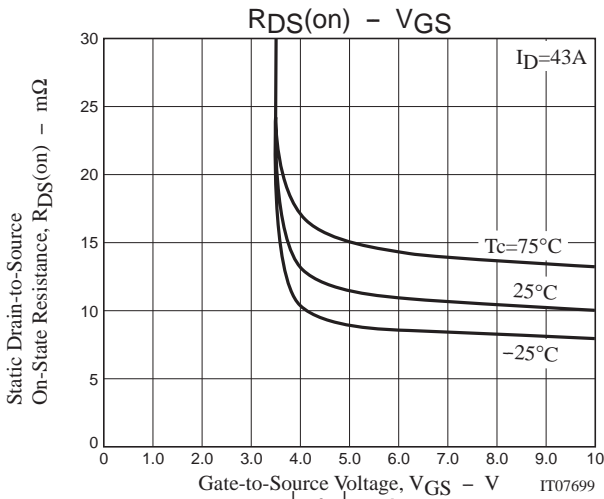
Switching Time Test Circuit

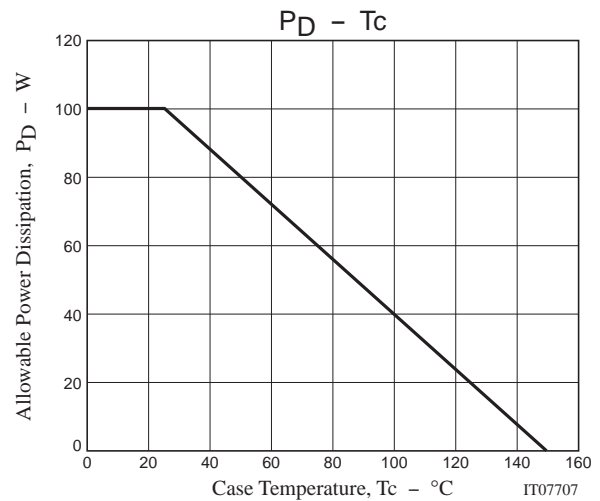
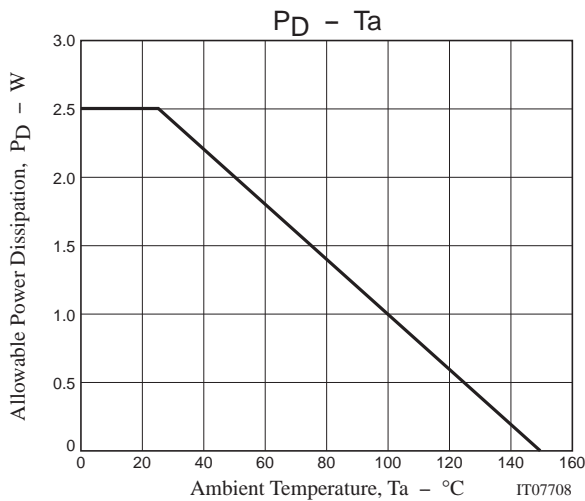


Unclamped Inductive Circuit



2SK3831





Note on usage : Since the 2SK3831 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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