



ON Semiconductor®

ON Semiconductor DATA SHEET

2SK3821 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 4V drive.
- Ultrahigh-speed switching.
- 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}		100	V
Gate-to-Source Voltage	V _{GSS}		±20	V
Drain Current (DC)	I _D		40	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	160	A
Allowable Power Dissipation	P _D		1.65	W
		Tc=25°C	65	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E _{AS}		200	mJ
Avalanche Current *2	I _{AV}		40	A

Note : *1 V_{DD}=20V, L=200μH, I_{AV}=40A

*2 L≤200μH, single 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	100			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, 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 =20A	18.5	31		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =20A, V _{GS} =10V		25	33	mΩ
	R _{DS(on)2}	I _D =20A, V _{GS} =4V		30	42	mΩ

Marking : K3821

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2SK3821

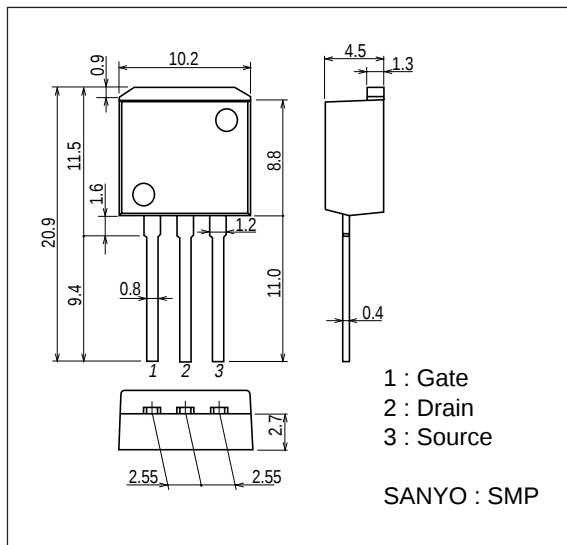
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=20V$, $f=1MHz$		4200		pF
Output Capacitance	Coss	$V_{DS}=20V$, $f=1MHz$		300		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=20V$, $f=1MHz$		250		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		30		ns
Rise Time	t_r	See specified Test Circuit.		68		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		300		ns
Fall Time	t_f	See specified Test Circuit.		110		ns
Total Gate Charge	Qg	$V_{DS}=50V$, $V_{GS}=10V$, $I_D=40A$		73		nC
Gate-to-Source Charge	Qgs	$V_{DS}=50V$, $V_{GS}=10V$, $I_D=40A$		12.5		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=50V$, $V_{GS}=10V$, $I_D=40A$		16		nC
Diode Forward Voltage	V_{SD}	$I_S=40A$, $V_{GS}=0$		1.0	1.2	V

Package Dimensions

unit : mm

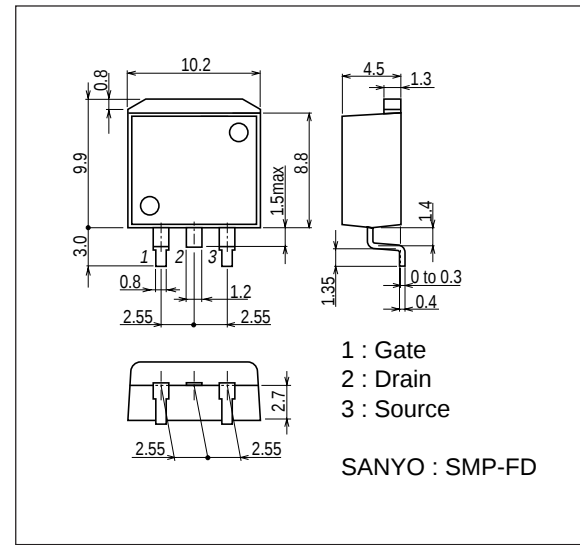
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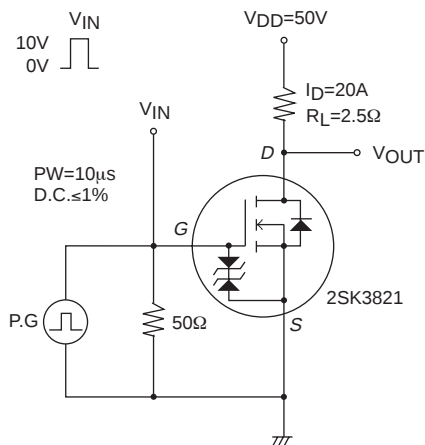
Package Dimensions

unit : mm

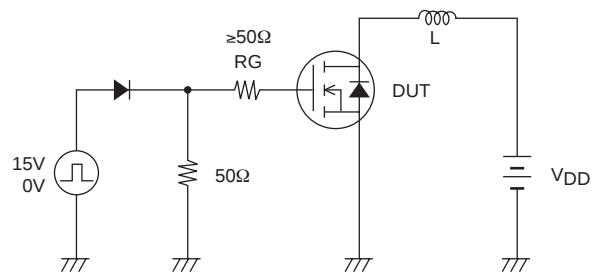
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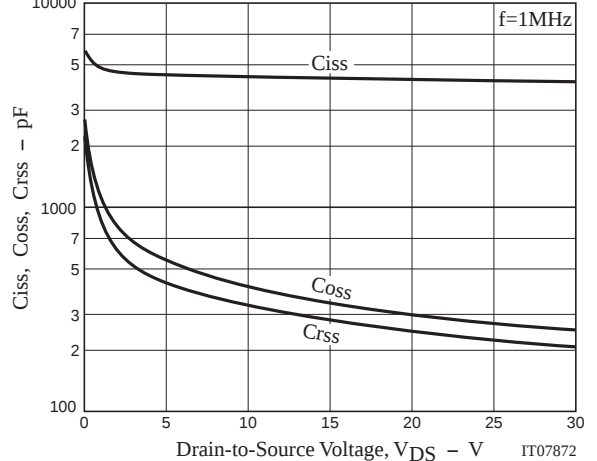
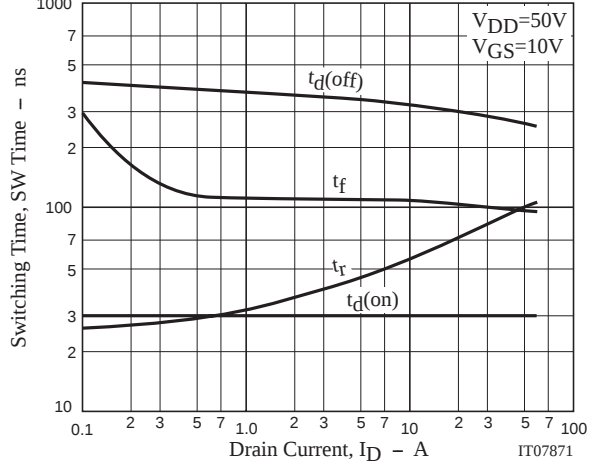
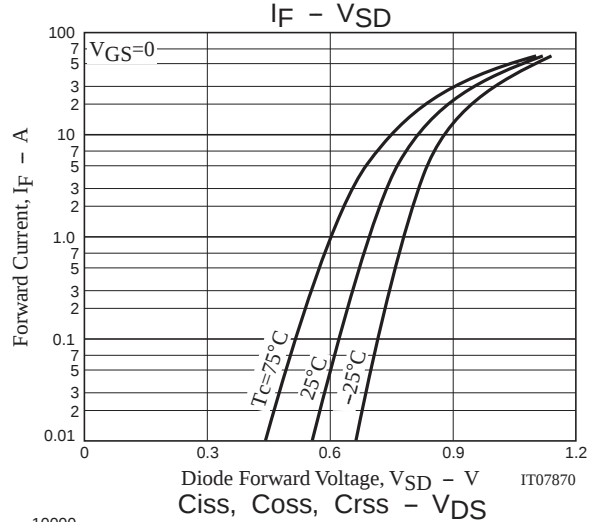
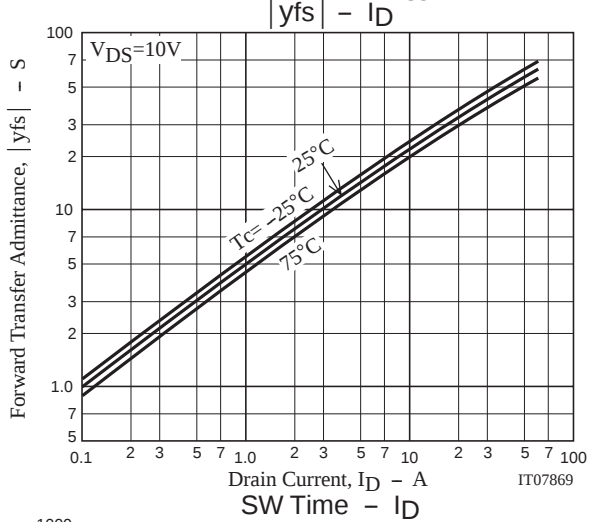
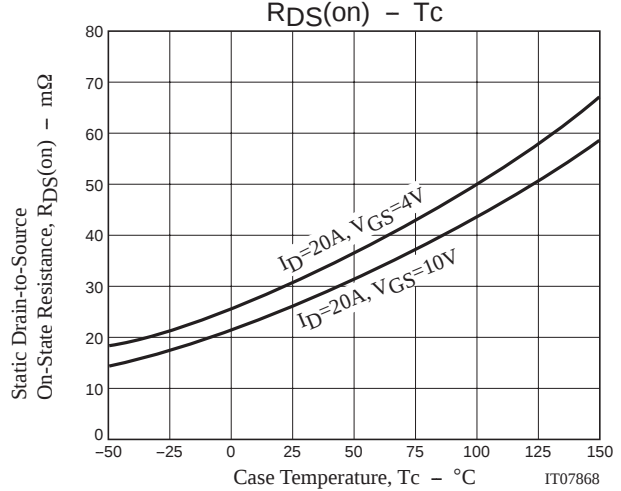
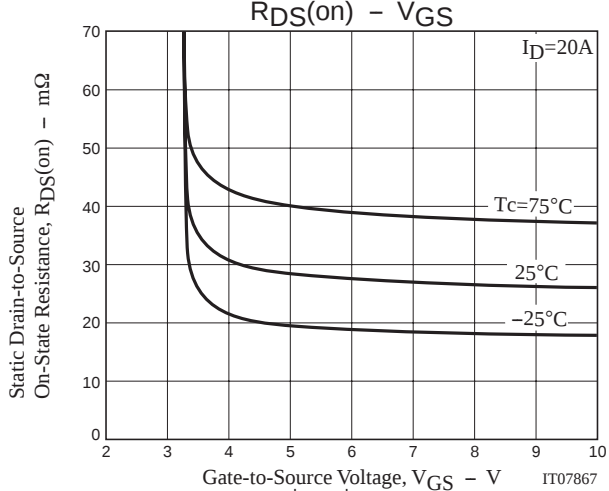
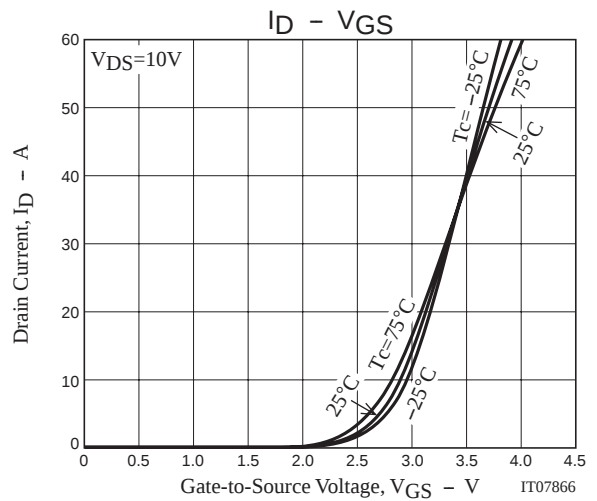
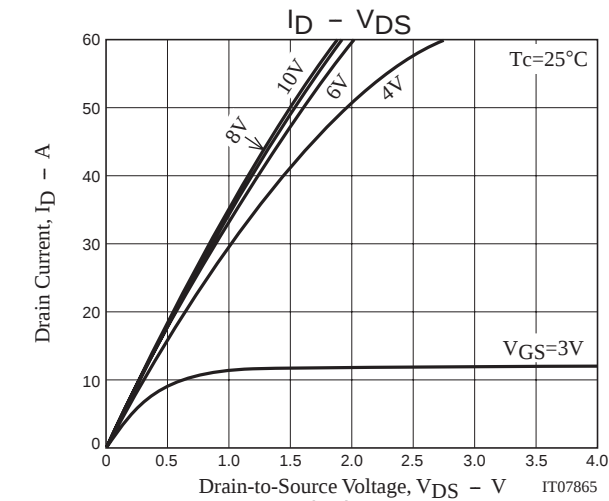


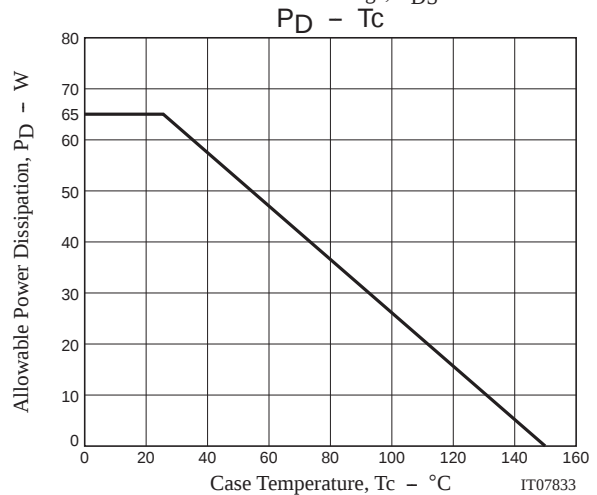
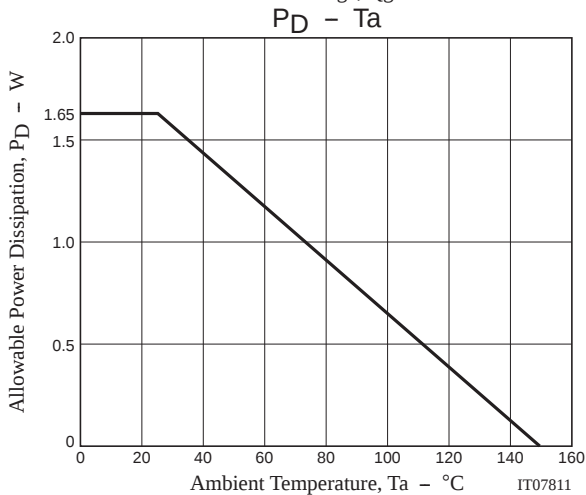
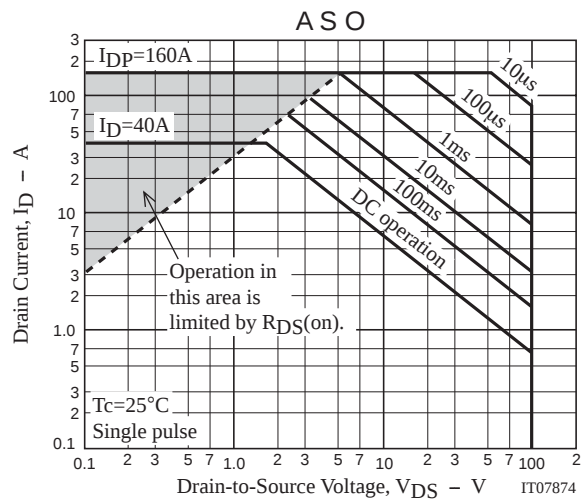
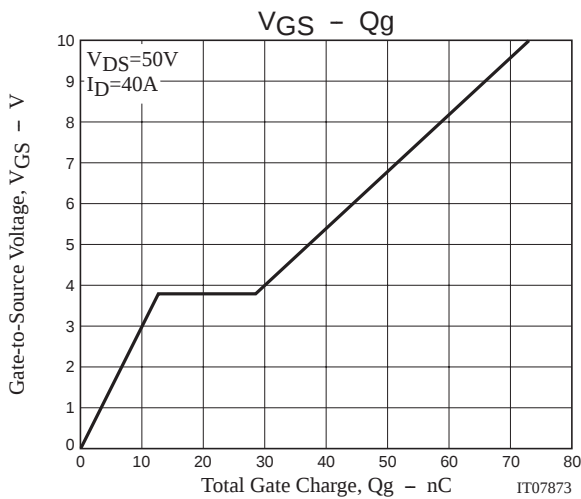
Switching Time Test Circuit



Unclamped Inductive Test Circuit







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