



ON Semiconductor®

ON Semiconductor DATA SHEET

2SK3824 — 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		60	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	240	A
Allowable Power Dissipation	P _D		1.75	W
		Tc=25°C	60	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E _{AS}		125	mJ
Avalanche Current *2	I _{AV}		60	A

Note : *1 V_{DD}=20V, L=50μH, I_{AV}=60A

*2 L≤50μH, 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	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 =30A	24	40		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =30A, V _{GS} =10V		11.5	15	mΩ
	R _{DS(on)2}	I _D =30A, V _{GS} =4V		16	22	mΩ

Marking : K3824

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2SK3824

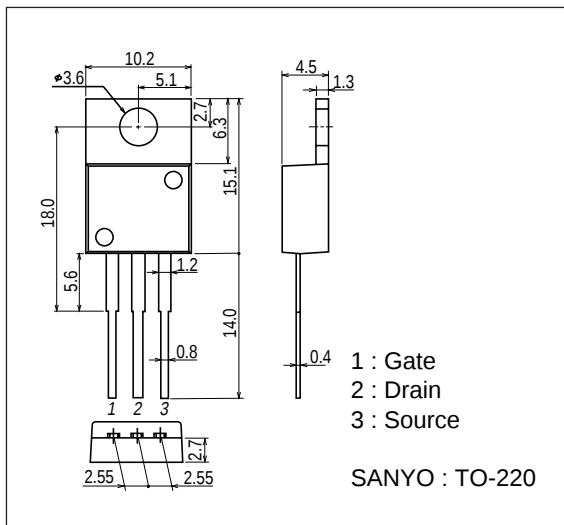
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=20V$, $f=1MHz$		3500		pF
Output Capacitance	Coss	$V_{DS}=20V$, $f=1MHz$		500		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=20V$, $f=1MHz$		350		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		26		ns
Rise Time	t_r	See specified Test Circuit.		230		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		255		ns
Fall Time	t_f	See specified Test Circuit.		230		ns
Total Gate Charge	Qg	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=60A$		67		nC
Gate-to-Source Charge	Qgs	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=60A$		10.6		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=60A$		10		nC
Diode Forward Voltage	V_{SD}	$I_S=60A$, $V_{GS}=0$		1.07	1.5	V

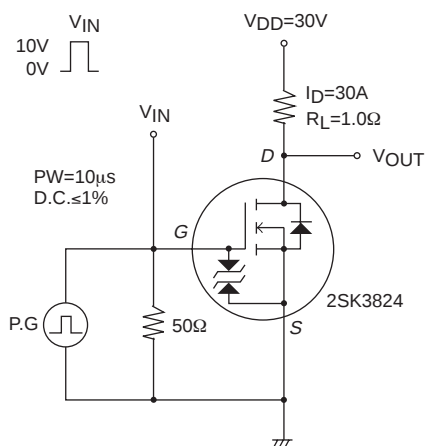
Package Dimensions

unit : mm

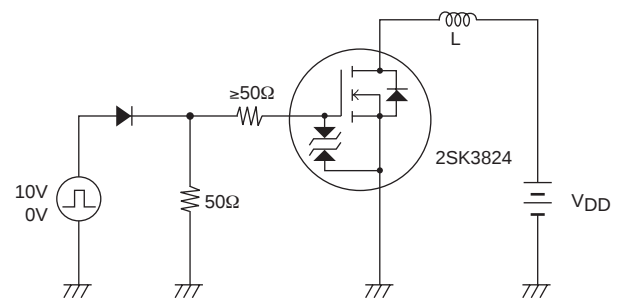
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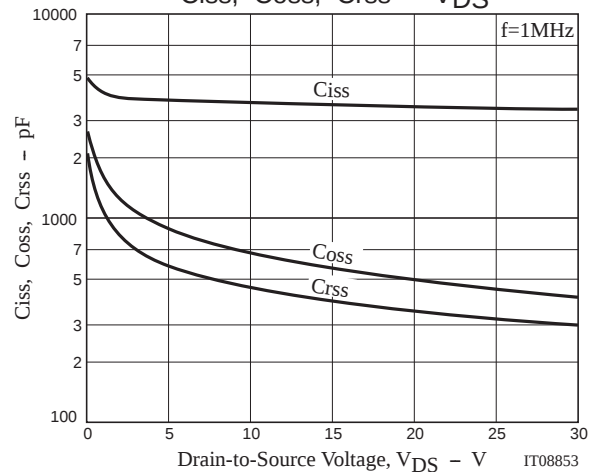
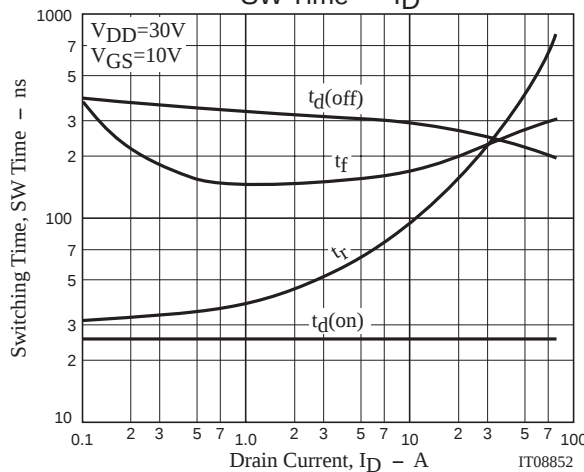
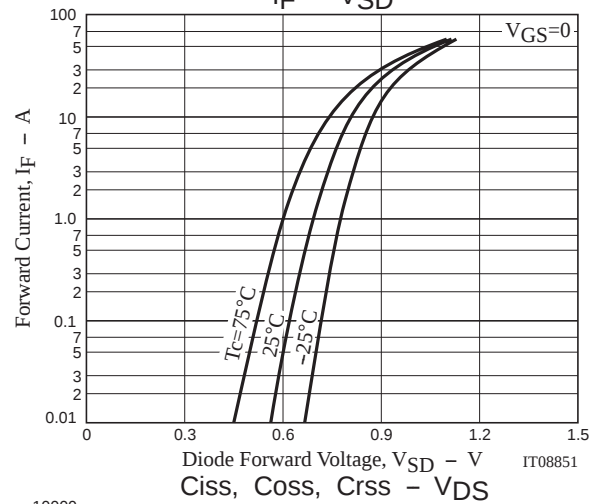
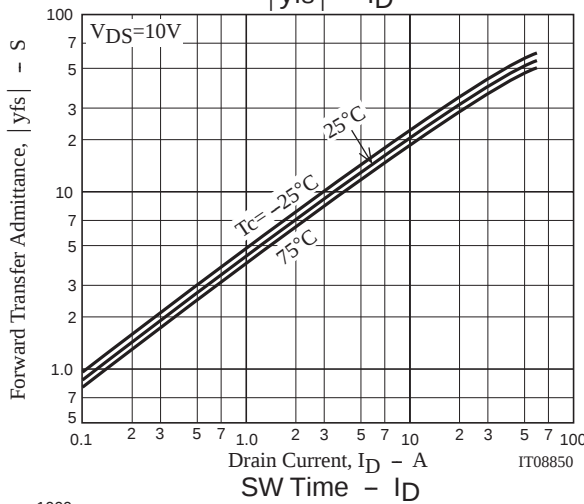
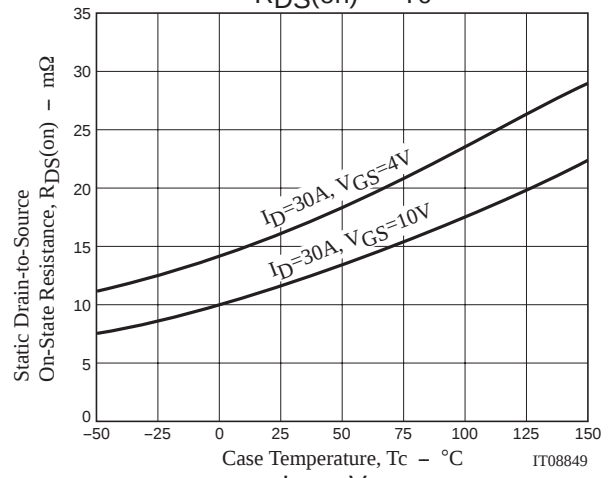
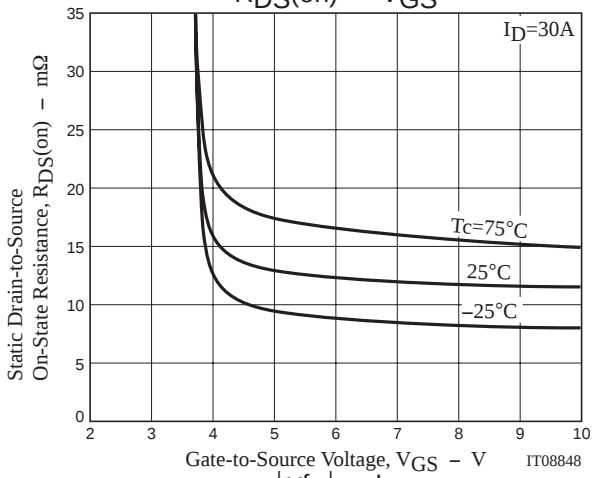
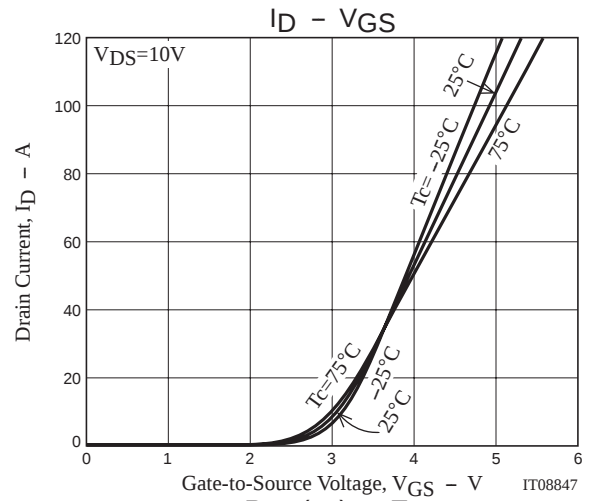
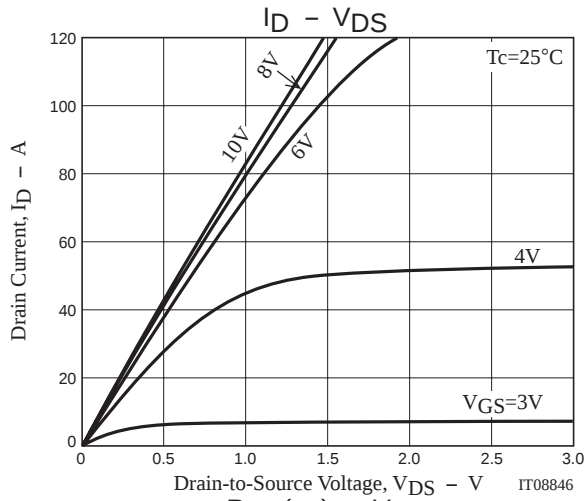


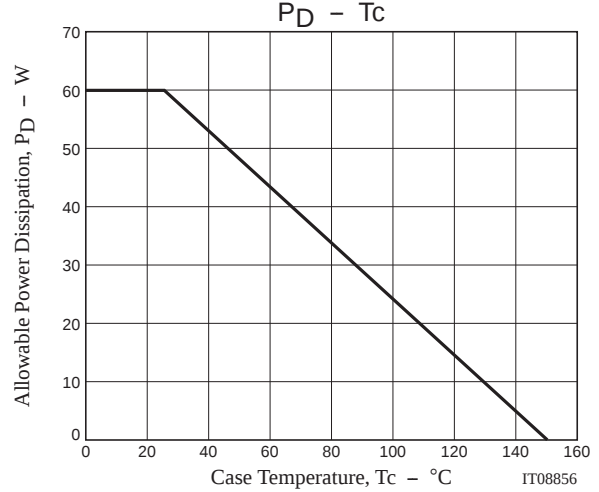
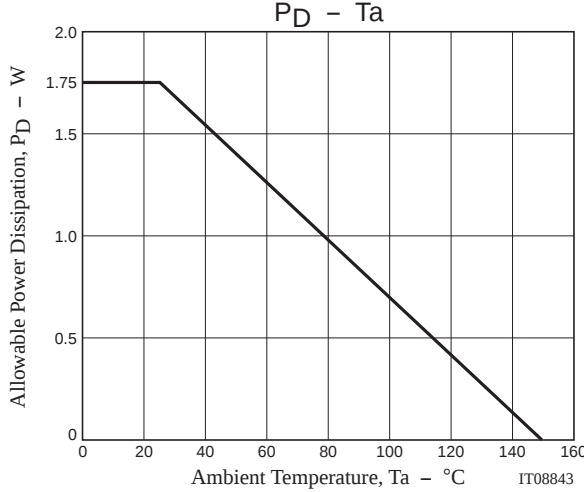
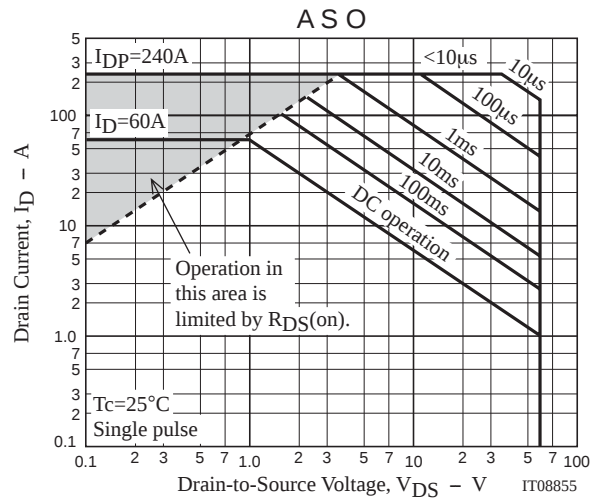
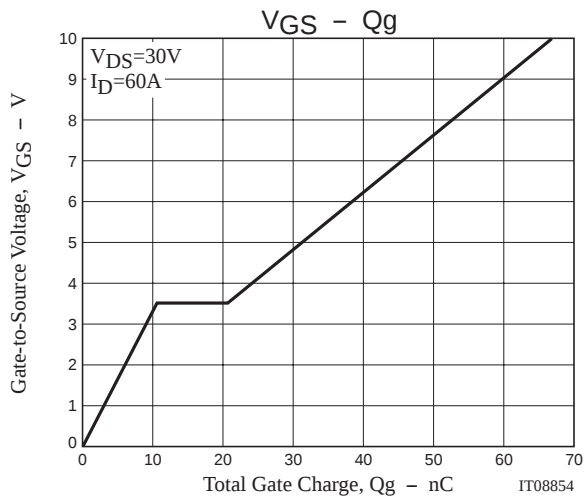
Switching Time Test Circuit



Avalanche Resistance Test Circuit







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