

2SK3706 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 4V drive.
- Motor driver, 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		12	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	48	A
Allowable Power Dissipation	P _D		2.0	W
		T _c =25°C	20	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E _{AS}		18	mJ
Avalanche Current *2	I _{AV}		12	A

*1 V_{DD}=20V, L=200μH, I_{AV}=12A

*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 =6A	7	10		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =6A, V _{GS} =10V		100	130	mΩ
	R _{DS(on)2}	I _D =6A, V _{GS} =4V		120	160	mΩ

Marking : K3706

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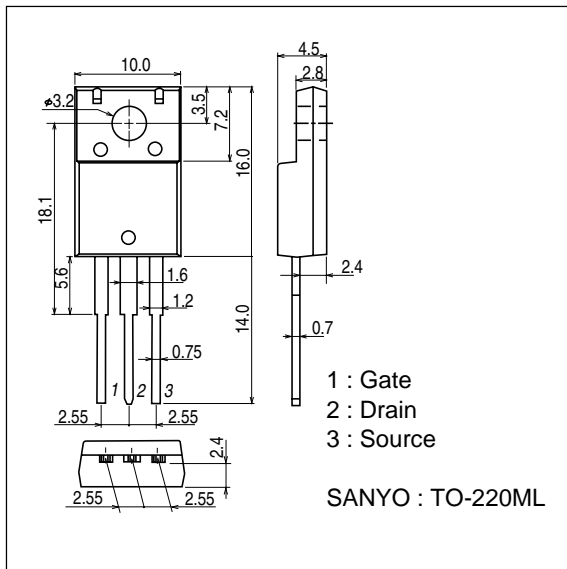
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	C_{iss}	$V_{DS}=20V, f=1MHz$		880		pF
Output Capacitance	C_{oss}	$V_{DS}=20V, f=1MHz$		80		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=20V, f=1MHz$		55		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		11.5		ns
Rise Time	t_r	See specified Test Circuit.		16		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		97		ns
Fall Time	t_f	See specified Test Circuit.		45		ns
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=12A$		24		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=50V, V_{GS}=10V, I_D=12A$		3.2		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=50V, V_{GS}=10V, I_D=12A$		5.5		nC
Diode Forward Voltage	V_{SD}	$I_S=12A, V_{GS}=0$		0.92	1.2	V

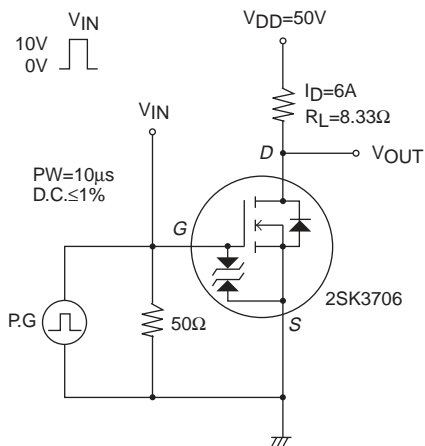
Package Dimensions

unit : mm

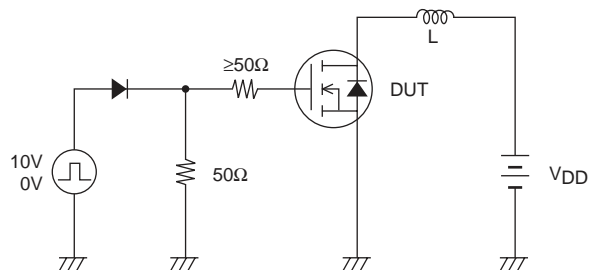
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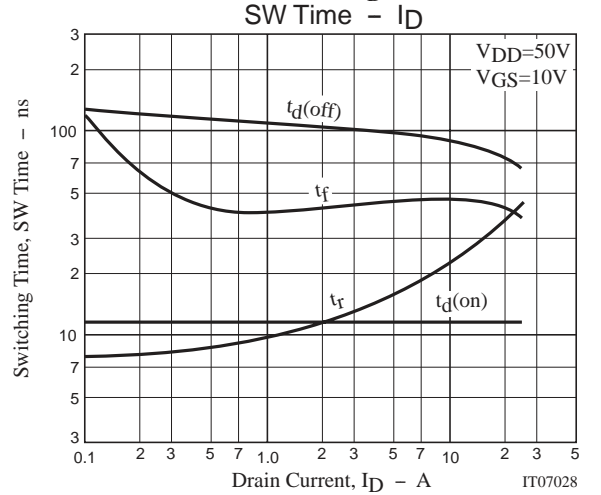
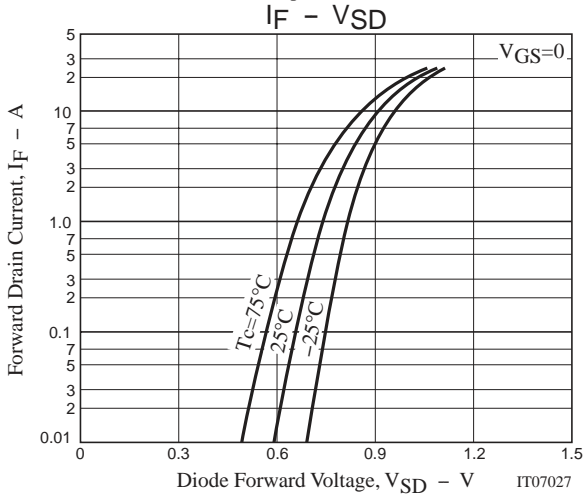
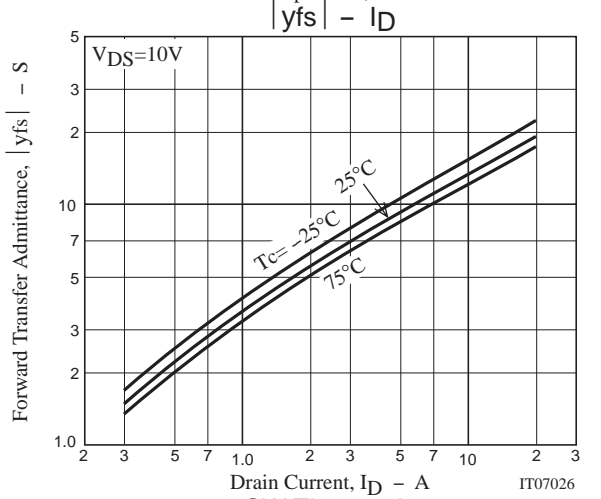
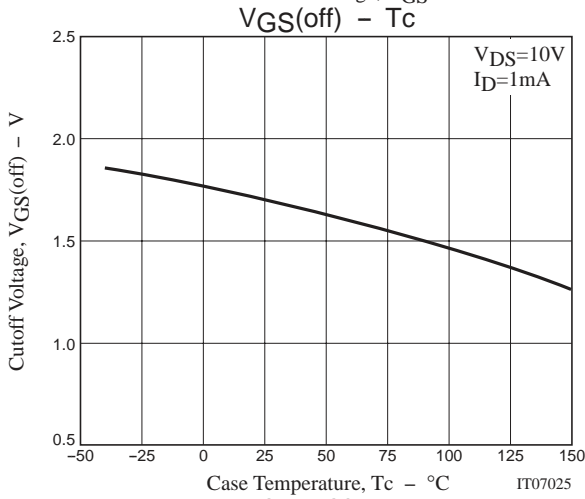
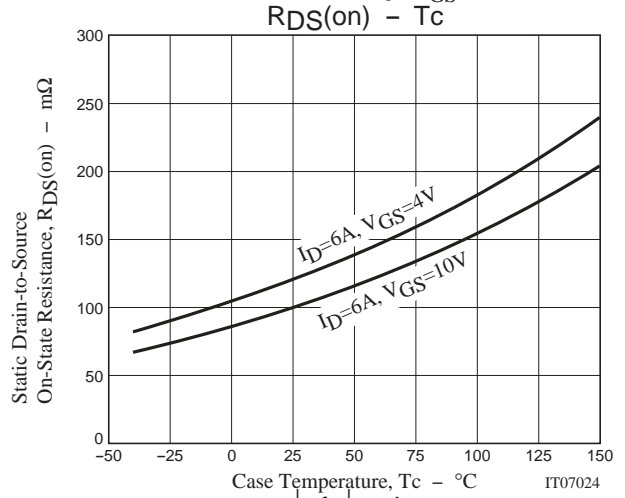
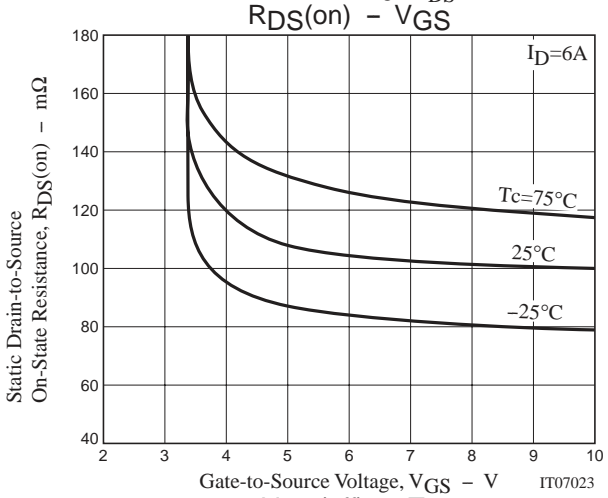
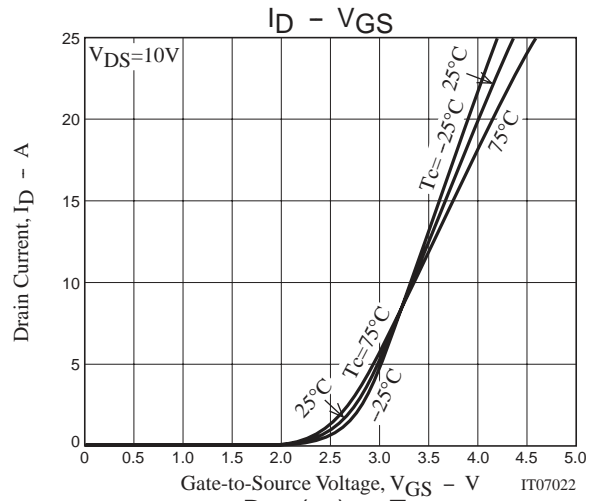
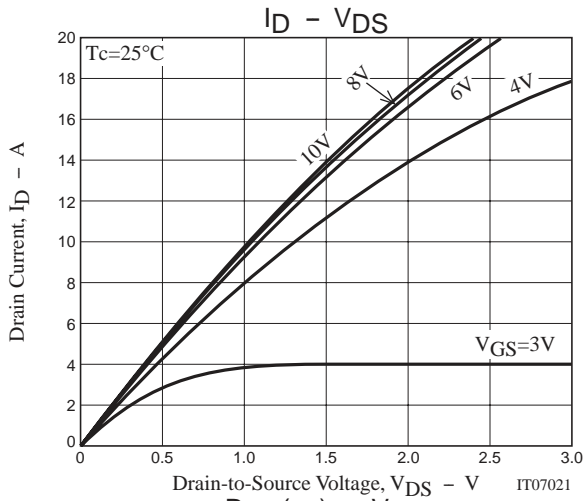
Switching Time Test Circuit



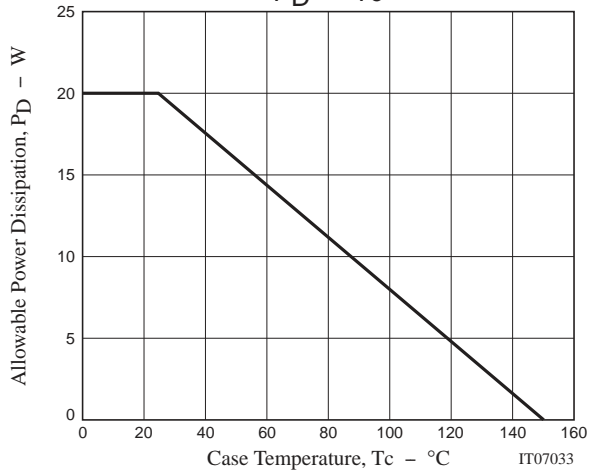
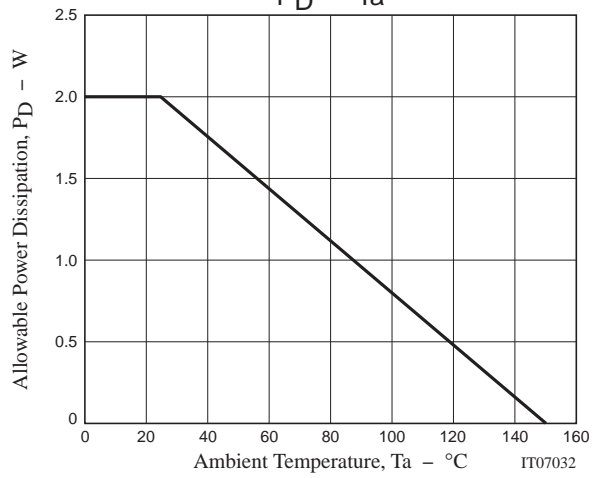
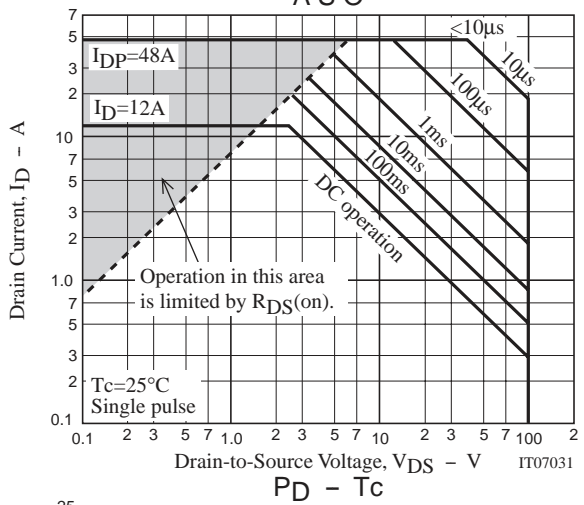
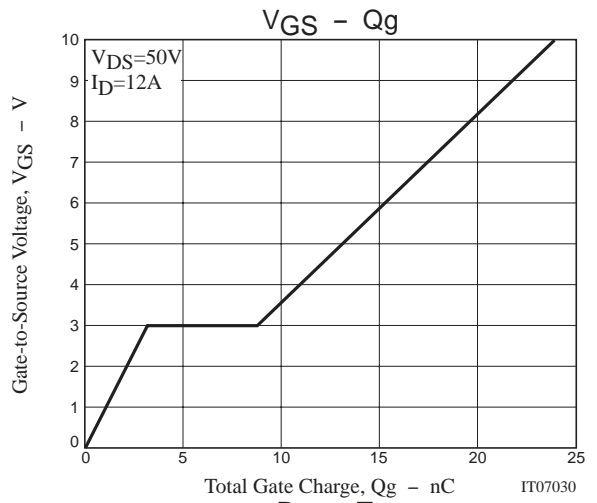
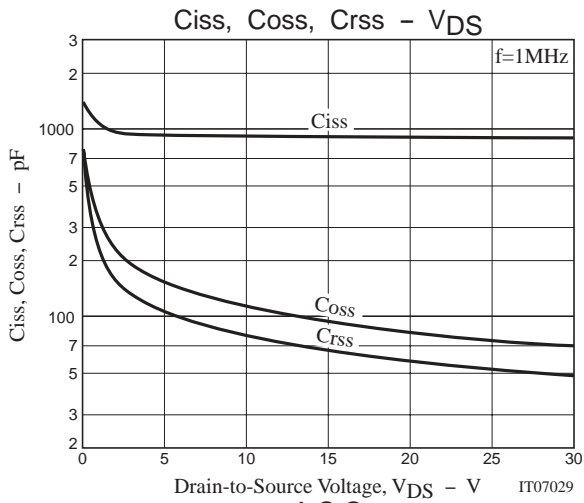
Unclamped Inductive Test Circuit



2SK3706



2SK3706



Note on usage : Since the 2SK3706 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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