



2SK3704 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

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

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		45	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	180	A
Allowable Power Dissipation	P _D		2.0	W
		T _c =25°C	30	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E _{AS}		303	mJ
Avalanche Current *2	I _{AV}		45	A

*1 V_{DD}=20V, L=200μH, I_{AV}=45A

*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	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 =23A	22	32		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =23A, V _{GS} =10V		10.5	14	mΩ
	R _{DS(on)2}	I _D =23A, V _{GS} =4V		15	21	mΩ

Marking : K3704

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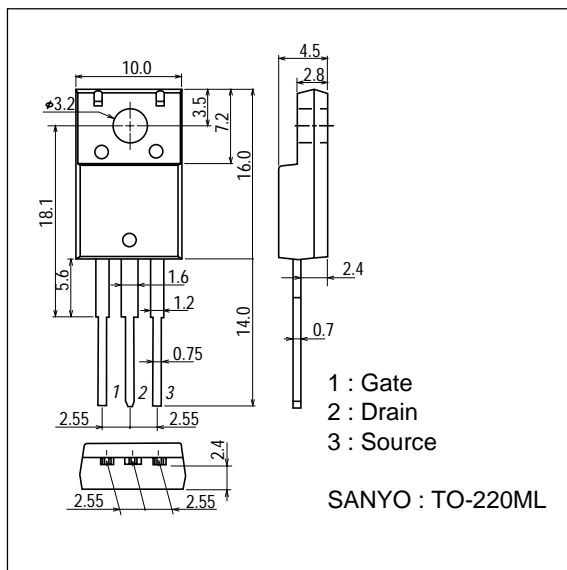
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V _{DS} =20V, f=1MHz		3500		pF
Output Capacitance	Coss	V _{DS} =20V, f=1MHz		500		pF
Reverse Transfer Capacitance	Crss	V _{DS} =20V, f=1MHz		350		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit.		26		ns
Rise Time	t _r	See specified Test Circuit.		175		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit.		265		ns
Fall Time	t _f	See specified Test Circuit.		210		ns
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =45A		67		nC
Gate-to-Source Charge	Q _{gs}	V _{DS} =30V, V _{GS} =10V, I _D =45A		10.6		nC
Gate-to-Drain "Miller" Charge	Q _{gd}	V _{DS} =30V, V _{GS} =10V, I _D =45A		10		nC
Diode Forward Voltage	V _{SD}	I _S =45A, V _{GS} =0		1.0	1.2	V

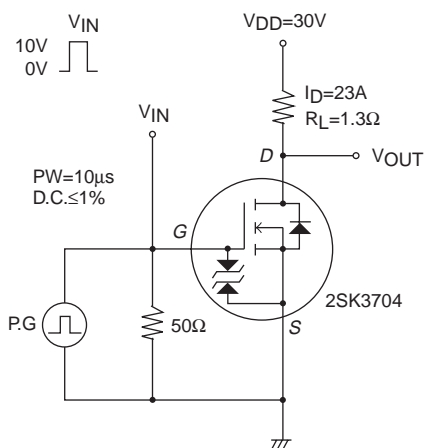
Package Dimensions

unit : mm

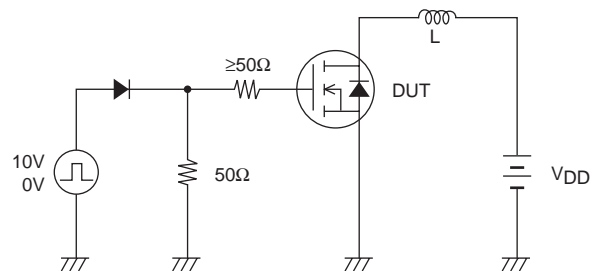
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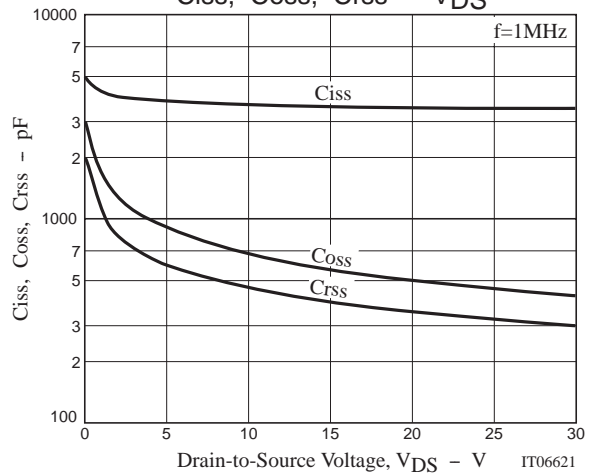
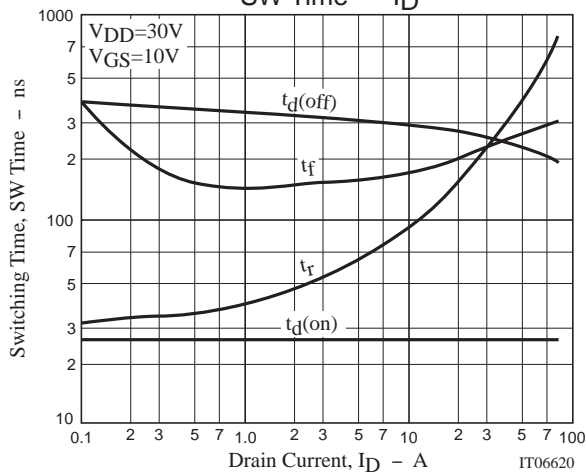
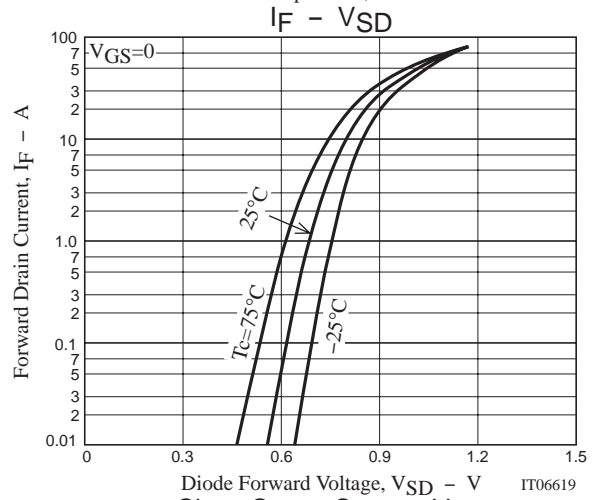
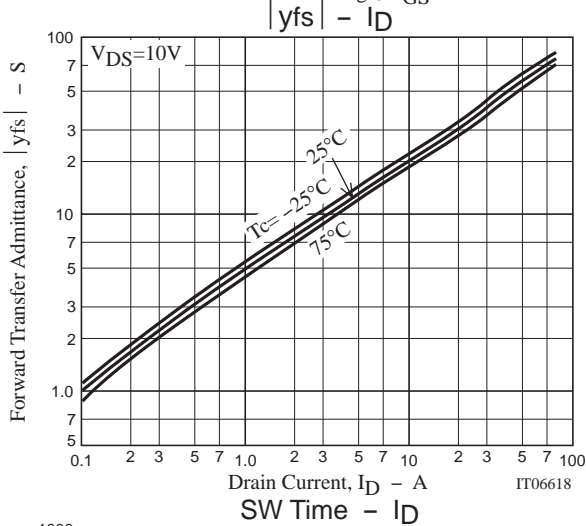
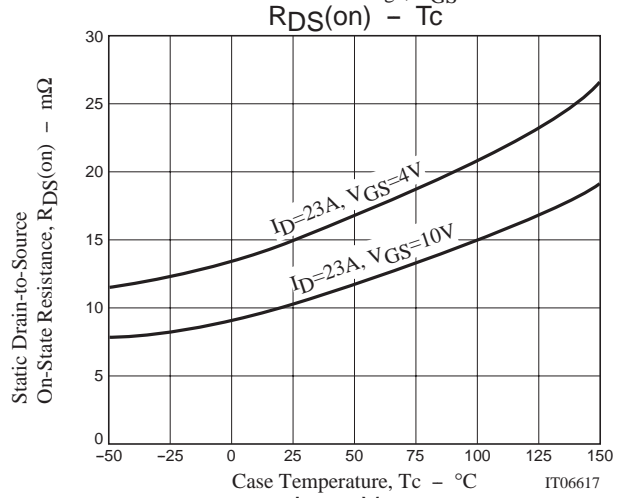
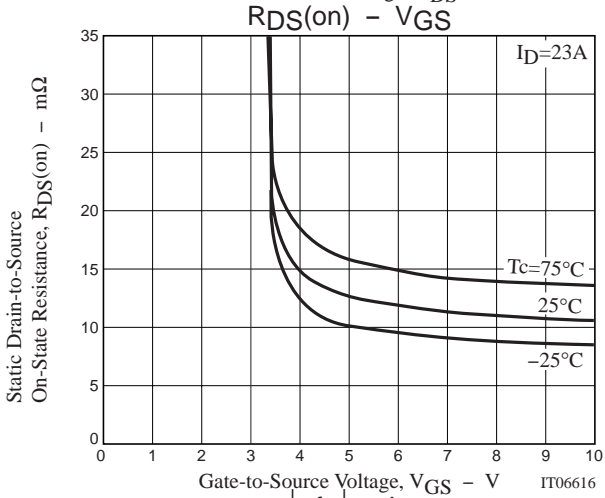
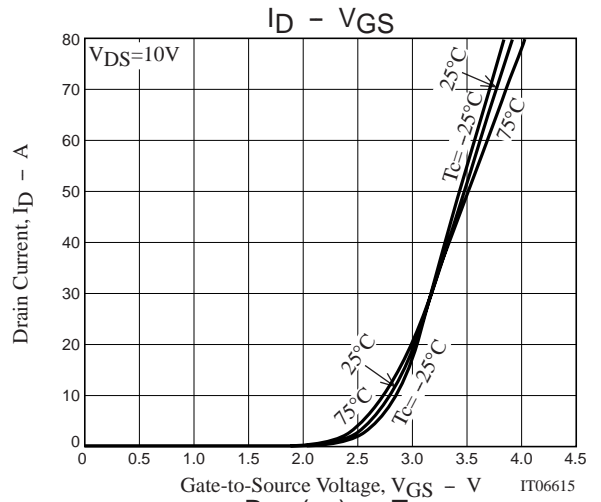
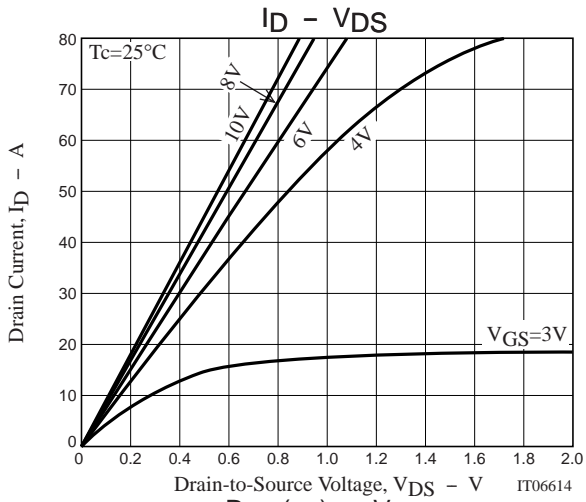
Switching Time Test Circuit



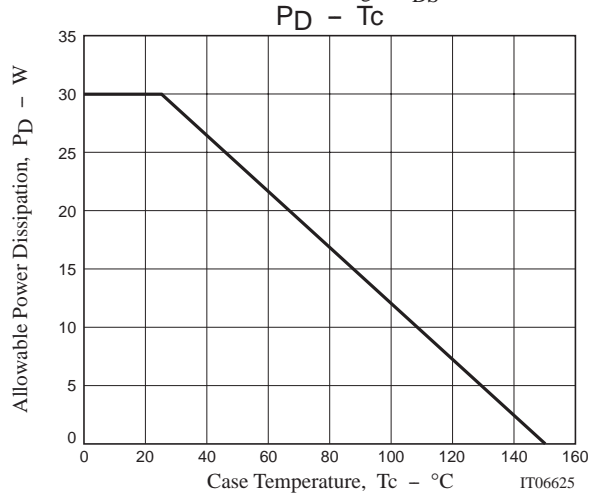
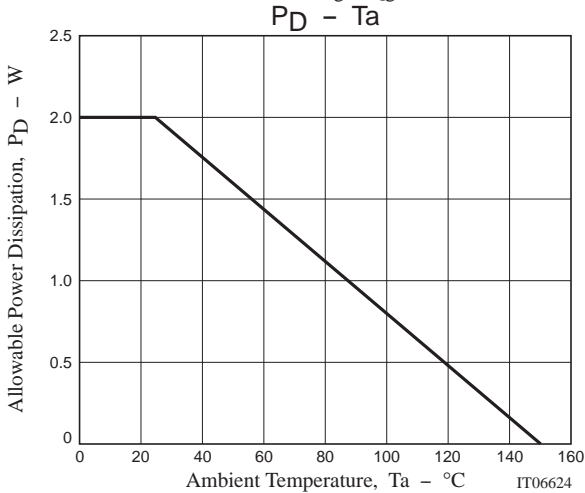
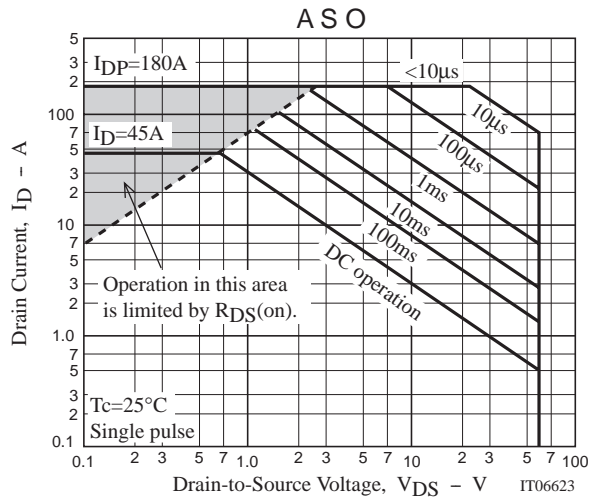
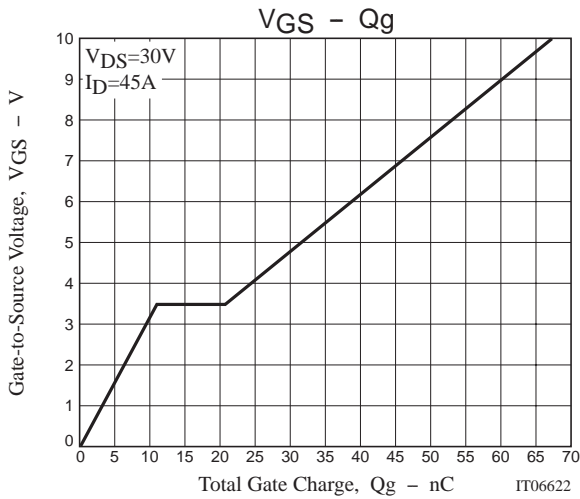
Unclamped Inductive Test Circuit



2SK3704



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Note on usage : Since the 2SK3704 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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