

# 2SK3711

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December 2005

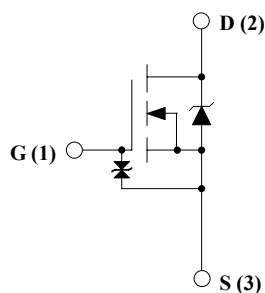
## ■Features

- Low on-resistance
- Built-in gate protection diode
- Avalanche energy capability guaranteed

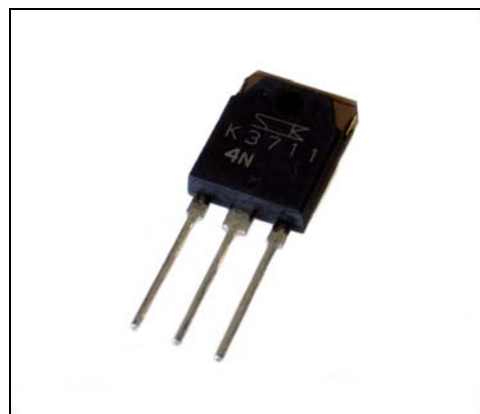
## ■Applications

- Electric power steering
- High current switching

## ■Equivalent circuit



## ■Package—TO3P



## Absolute maximum ratings

(Ta=25°C)

Characteristic	Symbol	Rating	Unit
Drain to Source Voltage	VDSS	60	V
Gate to Source Voltage	VGSS	±20	V
Continuous Drain Current	ID	±70A	A
Pulsed Drain Current	ID (pulse) *1	±140A	A
Maximum Power Dissipation	PD	130 (Tc=25°C)	W
Single Pulse Avalanche Energy	EAS *2	468	mJ
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	-55 to 150	°C

\*1 PW≤100μs, duty cycle≤1%

\*2 VDD=20V, L=1mH, ILp=25A, unclamped, RG=50Ω. See Fig.1

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## Electrical characteristics

(Ta=25°C)

Characteristic	Symbol	Test Conditions	Limits			Unit
			MIN	TYP	MAX	
Drain to Source breakdown Voltage	V(BR)DSS	ID=100μA, VGS=0V	60			V
Gate to Source Leakage Current	IGSS	VGS=±15V			±10	μA
Drain to Source Leakage Current	IDSS	VDS=60V, VGS=0V			100	μA
Gate Threshold Voltage	VTH	VDS=10V, ID=1mA	2.0	3.0	4.0	V
Forward Transconductance	Re(Yfs)	VDS=10V, ID=35A	30	80		S
Static Drain to Source On-Resistance	RDS(ON)	ID=35A, VGS=10V		5.0	6.0	mΩ
Input Capacitance	Ciss	VDS=10V		8000		pF
Output Capacitance	Coss	VGS=0V		1250		
Reverse Transfer Capacitance	Crss	f=1MHz		1000		
Turn-On Delay Time	td(on)	ID=35A, VDD≈20V RL=0.57Ω, VGS=10V Rg=22Ω Refer to Fig. 2		110		ns
Rise Time	tr			100		
Turn-Off Delay Time	td(off)			440		
Fall Time	tf			160		
Source-Drain Diode Forward Voltage	VSD	ISD=50A, VGS=0V		0.9	1.5	V
Source-Drain Diode Recovery Time	trr	ISD=25A, di/dt=50A/μs		100		ns

# 60V N -ch MOSFET

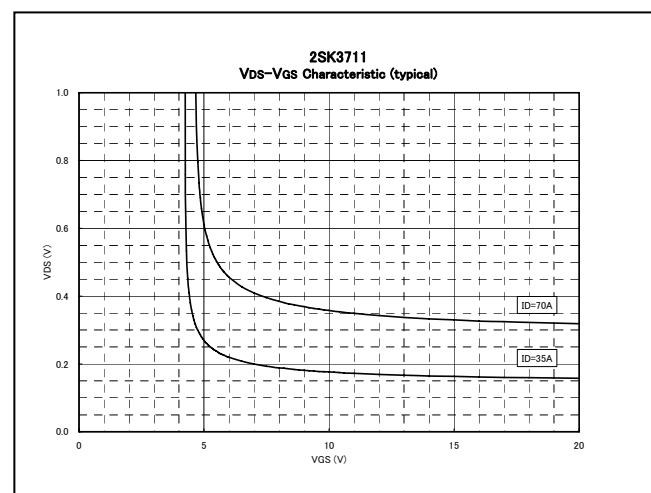
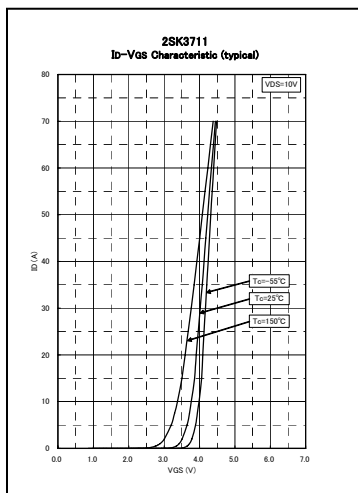
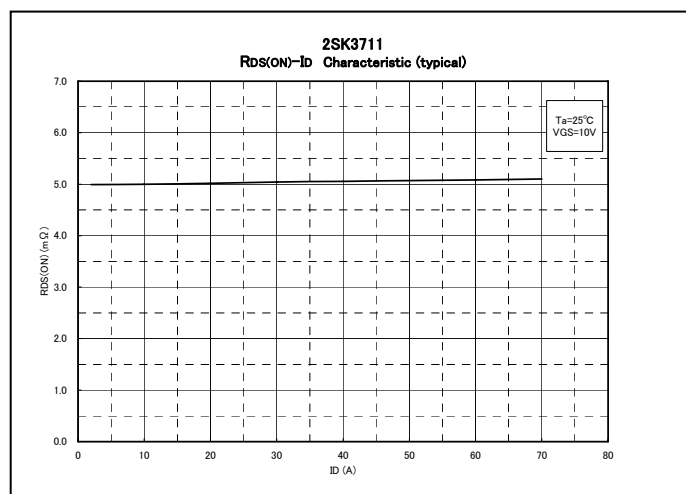
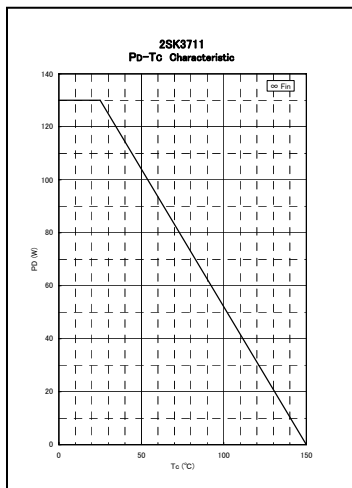
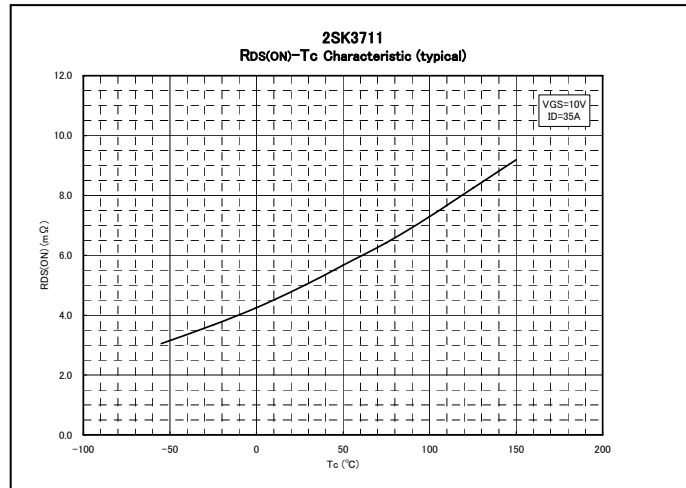
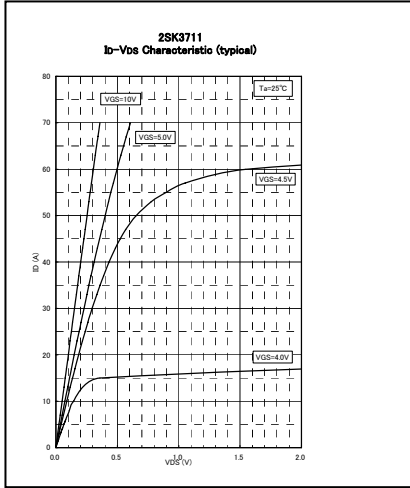
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## Characteristic Curves (Tc=25°C)



# 60V N -ch MOSFET

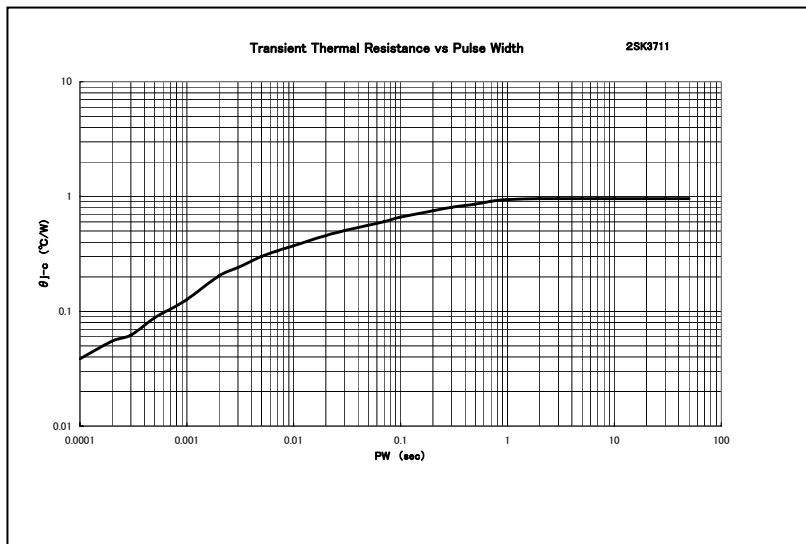
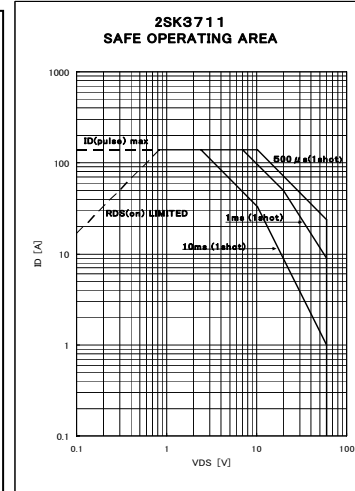
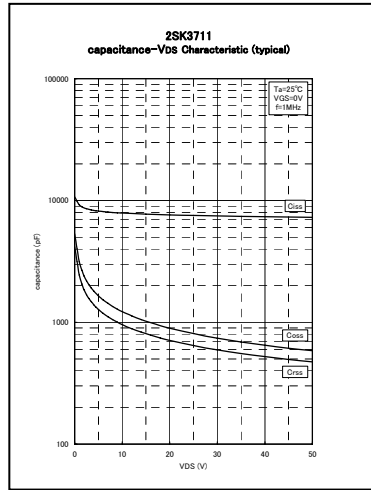
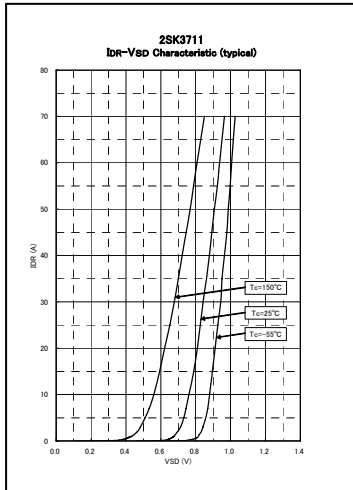
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## Characteristic Curves (Tc=25°C)



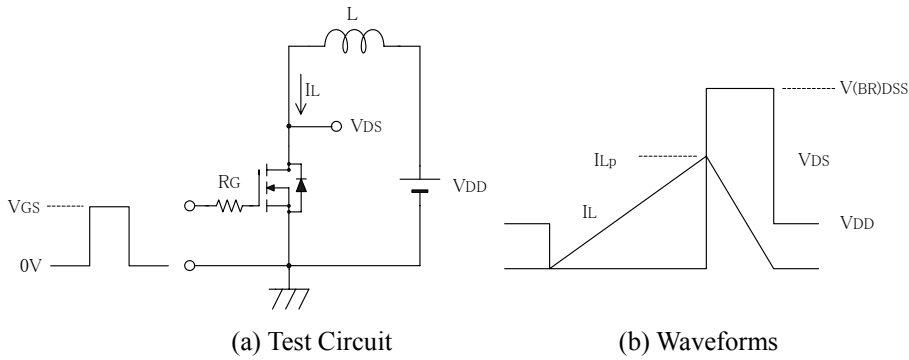
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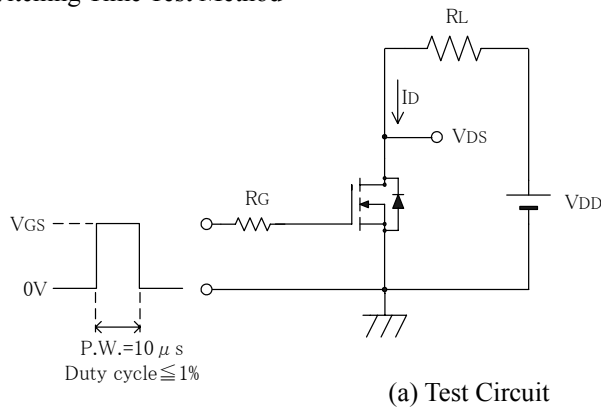
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Fig.1 Unclamped Inductive Test Method

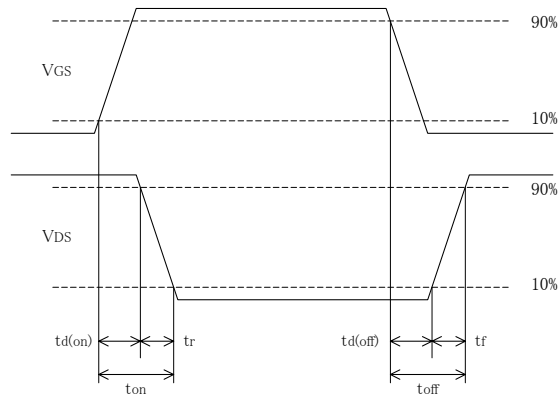


$$EAS = \frac{1}{2} \cdot L \cdot I_{LP}^2 \cdot \frac{V_{(BR)DSS}}{V_{(BR)DSS} - V_{DD}}$$

Fig.2 Switching Time Test Method



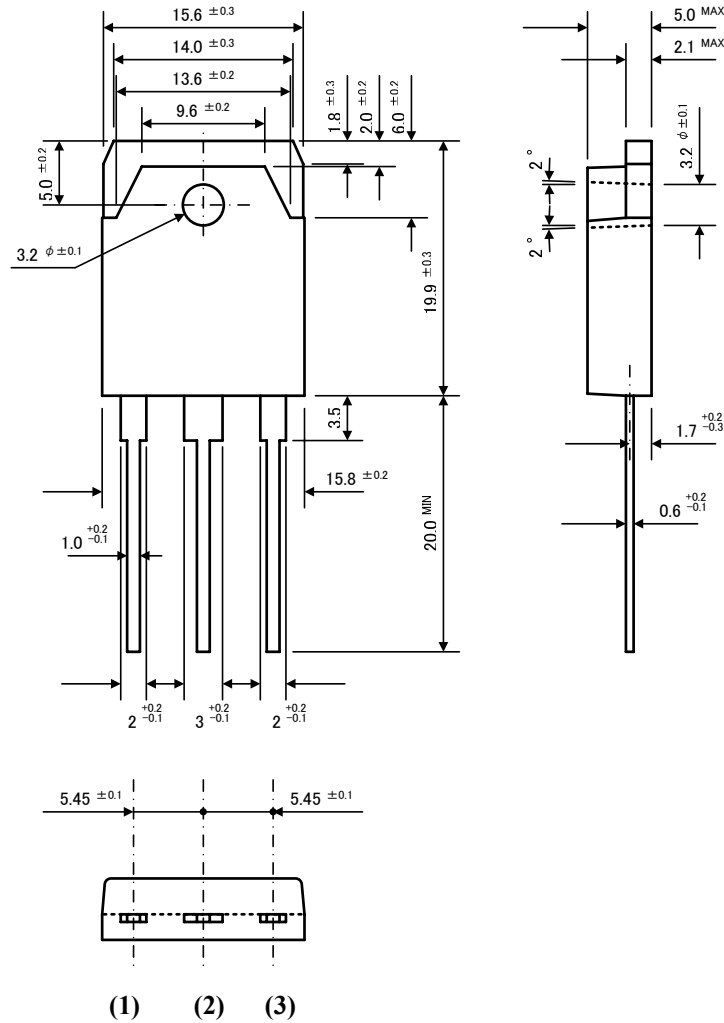
VDD ≈ 20V  
ID = 35A  
RL = 0.57Ω  
VGS = 10V  
RG = 22Ω



# 2SK3711

## External Dimensions

MT100 (TO3P)



Mass: Approx. 6.0g

- (1) Gate
- (2) Drain (Back Side)
- (3) Source

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