

MOS FIELD EFFECT TRANSISTOR 2SK3306

SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

The 2SK3306 is N-Channel DMOS FET device that features a low gate charge and excellent switching characteristics, and designed for high voltage applications such as switching power supply, AC adapter.

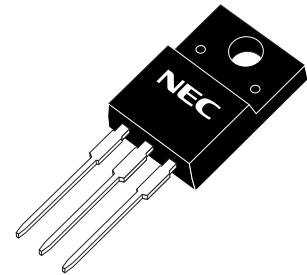
ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK3306	Isolated TO-220 (MP-45F)

FEATURES

- Low gate charge :
- ★ $Q_G = 13 \text{ nC TYP. (} V_{DD} = 400 \text{ V, } V_{GS} = 10 \text{ V, } I_D = 5.0 \text{ A)}$
- Gate voltage rating : $\pm 30 \text{ V}$
- Low on-state resistance :
 $R_{DS(on)} = 1.5 \Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 2.5 \text{ A)}$
- Avalanche capability ratings
- Isolated TO-220(MP-45F) package

(Isolated TO-220)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	500	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	$V_{GSS(AC)}$	± 30	V
Drain Current (DC)	$I_{D(DC)}$	± 5	A
Drain Current (pulse) ^{Note1}	$I_{D(pulse)}$	± 20	A
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_T	35	W
Total Power Dissipation ($T_A = 25^\circ\text{C}$)	P_T	2.0	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$
Single Avalanche Current ^{Note2}	I_{AS}	5.0	A
Single Avalanche Energy ^{Note2}	E_{AS}	125	mJ

Notes 1. $PW \leq 10 \mu\text{s}$, Duty Cycle $\leq 1 \%$

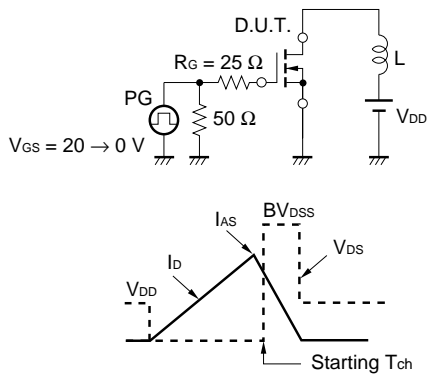
2. Starting $T_{ch} = 25^\circ\text{C}$, $V_{DD} = 150 \text{ V}$, $R_G = 25 \Omega$, $V_{GS} = 20 \text{ V} \rightarrow 0 \text{ V}$

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

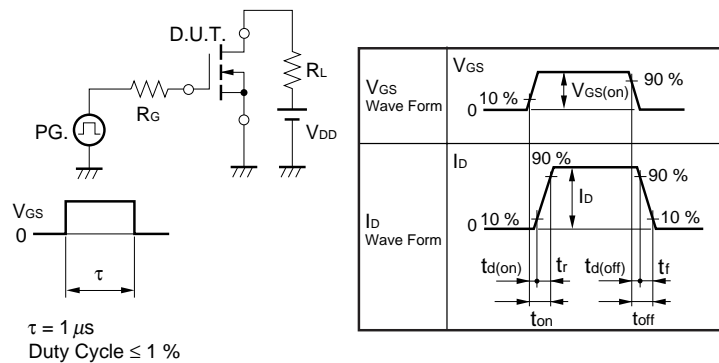
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
★ Drain Leakage Current	I _{DSS}			100	μA	V _{DS} = 500 V, V _{GS} = 0 V
★ Gate to Source Leakage Current	I _{GSS}			±100	nA	V _{GS} = ±30 V, V _{DS} = 0 V
★ Gate to Source Cut-off Voltage	V _{GS(off)}	2.5		3.5	V	V _{DS} = 10 V, I _D = 1 mA
★ Forward Transfer Admittance	y _{fs}	1.0	3.0		S	V _{DS} = 10 V, I _D = 2.5 A
★ Drain to Source On-state Resistance	R _{DS(on)}		1.35	1.5	Ω	V _{GS} = 10 V, I _D = 2.5 A
★ Input Capacitance	C _{iss}		700		pF	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz
Output Capacitance	C _{oss}		115		pF	
Reverse Transfer Capacitance	C _{rss}		6		pF	
Turn-on Delay Time	t _{d(on)}		16		ns	V _{DD} = 150 V, I _D = 2.5 A, V _{GS(on)} = 10 V, R _G = 10 Ω, R _L = 60 Ω
Rise Time	t _r		3		ns	
Turn-off Delay Time	t _{d(off)}		33		ns	
Fall Time	t _f		5.5		ns	
★ Total Gate Charge	Q _G		13		nC	V _{DD} = 400 V, V _{GS(on)} = 10 V, I _D = 5.0 A
★ Gate to Source Charge	Q _{GS}		4		nC	
★ Gate to Drain Charge	Q _{GD}		4.5		nC	
★ Body Diode Forward Voltage	V _{F(S-D)}		1.0		V	I _F = 5.0 A, V _{GS} = 0 V
Reverse Recovery Time	t _{rr}		0.7		μs	I _F = 5.0 A, V _{GS} = 0 V, di/dt = 50 A/μs
★ Reverse Recovery Charge	Q _{rr}		3.3		μC	

TEST CIRCUIT 1 AVALANCHE CAPABILITY



TEST CIRCUIT 2 SWITCHING TIME



TEST CIRCUIT 3 GATE CHARGE

