MOS FIELD EFFECT POWER TRANSISTORS
2SK2134, 2SK2134-Z

SWITCHING
N-CHANNEL POWER MOS FET
INDUSTRIAL USE

DESCRIPTION

The 2SK2134, 2SK2134-Z are N-channel Power MOS Field Effect Transistors designed for high voltage switching applications.

FEATURES

- Low On-state Resistance
  $R_{DS(on)}$ = 0.4 Ω MAX. (V_{GS} = 10 V, I_D = 7.0 A)
- Low C_{iss} C_{iss} = 500 pF TYP.
- High Avalanche Capability Ratings

QUALITY GRADE

Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS

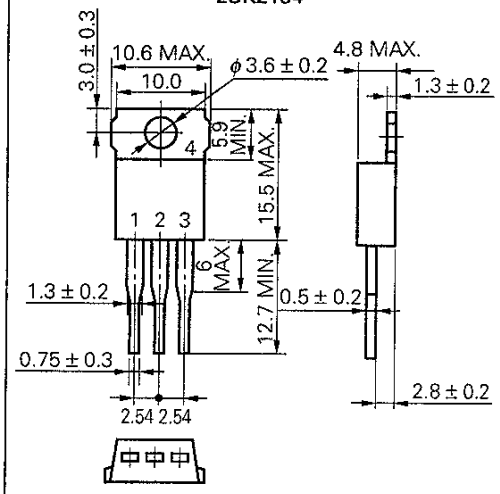
Drain to Source Voltage	V_{DSS}	200	V
Gate to Source Voltage	V_{GSS}	±30	V
Drain Current (DC)	$I_{D(DS)}$	±13	A
Drain Current (pulse)	$I_{D(pulse)}$*	±39	A
Single Avalanche Current**	I_{AS}	13	A
Single Avalanche Energy**	E_{AS}	33.8	mJ
Total Power Dissipation (T_a = 25 °C)	P_{T1}	1.5	W
Total Power Dissipation (T_C = 25 °C)	P_{T2}	70	W
Storage Temperature	T_{stg}	−55 to +150	°C
Channel Temperature	T_{ch}	150	°C

* PW ≦ 10 μs, Duty Cycle ≦ 1 %

** Starting T_{ch} = 25 °C, R_G = 25 Ω, V_{GS} = 20 V → 0

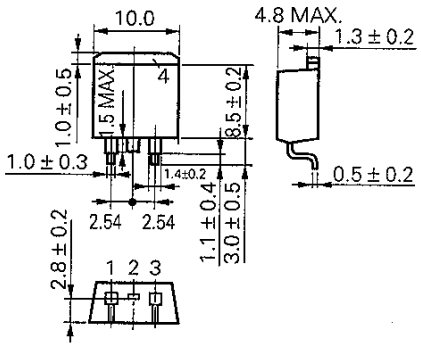
PACKAGE DIMENSIONS
(Unit : mm)

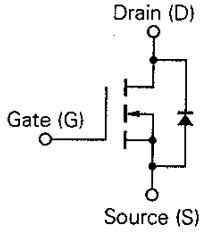
2SK2134



MP-25 (TO-220AB)

2SK2134-Z





1. Gate
2. Drain
3. Source
4. Fin (Drain)

(Diode in the figure is the parasitic diode)

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source On-state Resistance	R_{DS} (on)		0.3	0.4	Ω	V_{GS} = 10 V, I_D = 7.0 A
Gate to Source Cutoff Voltage	V_{GS} (off)	2.0		4.0	V	V_{DS} = 10 V, I_D = 1 mA
Forward Transfer Admittance	$\|y_{fs}\|$	2.0			S	V_{DS} = 10 V, I_D = 7.0 A
Drain Leakage Current	I_{DSS}			100	μA	V_{DS} = 200 V, V_{GS} = 0
Gate to Source Leakage Current	I_{GSS}			±100	nA	V_{GS} = ±30 V, V_{DS} = 0
Input Capacitance	C_{iss}		500		pF	V_{DS} = 10 V V_{GS} = 0 f = 1 MHz
Output Capacitance	C_{oss}		230		pF	
Reverse Transfer Capacitance	C_{rss}		60		pF	
Turn-On Delay Time	$t_{d(on)}$		12		ns	V_{GS} = 10 V V_{DD} = 100 V I_D = 7.0 A, R_G = 10 Ω R_L = 14.3 Ω
Rise Time	t_r		45		ns	
Turn-Off Delay Time	$t_{d(off)}$		35		ns	
Fall Time	t_f		12		ns	
Total Gate Charge	Q_G		15		nC	V_{GS} = −10 V I_D = 13 A V_{DD} = 160 V
Gate to Source Charge	Q_{GS}		5.0		nC	
Gate to Drain Charge	Q_{GD}		8.0		nC	
Diode Forward Voltage	$V_{F(S-D)}$		1.0		V	I_F = 13 A, V_{GS} = 0
Reverse Recovery Time	t_{rr}		200		ns	I_F = 13 A di/dt = 50 A/μs
Reverse Recovery Charge	Q_{rr}		0.6		μC	

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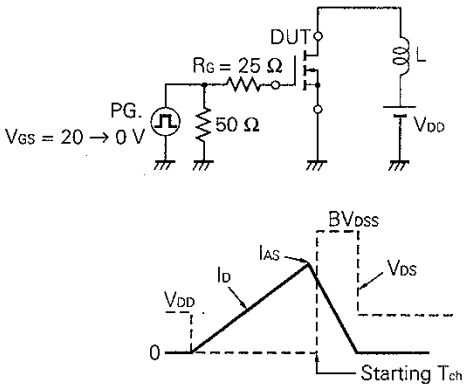
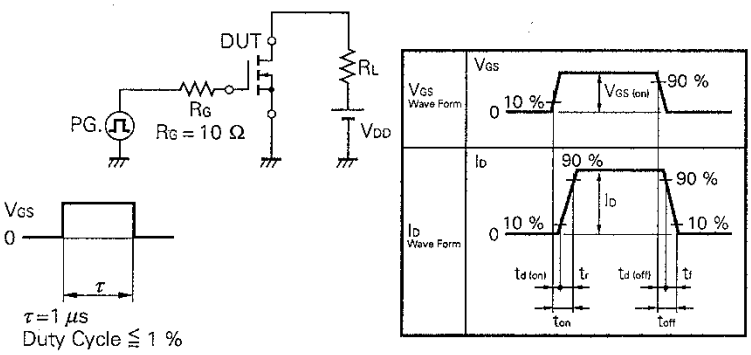
Test Circuit 1 : Avalanche Capability



Test Circuit 2 : Switching Time



Test Circuit 3 : Gate Charge