SK05N10A

N-Channel MOSFET

BV_{DSS},T_A=25℃	$R_{DS(ON)}$,typ@10V	I_D,T_A=25℃
100V	135mΩ	5A

Features

- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

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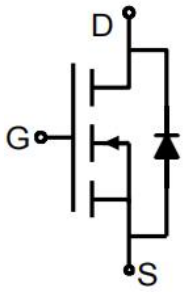


Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Description

The SK05N10A uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

Absolute Maximum Ratings(T_A=25℃,unless otherwise noted.)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	100	V
Gate-source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	5	A
Drain Current-Pulsed(1)	I_{DM}	20	A
Maximum Power Dissipation	P_D	3	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃
Thermal Resistance,Junction-to-Ambient(2)	$R_{\theta JA}$	41.7	℃/W

Electrical Characteristics(T_A=25℃,unless otherwise noted.)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	100	105		V
Drain-source leakage current	I_{DSS}	V_{DS}=80V,V_{GS}=0V			800	nA

Gate-source leakage current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±30	μA
On Characteristics(3)						
Gate Threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1	2	3	V
Drain-source on resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=5A		135	150	mΩ
Forward Trans conductance	g_{FS}	V_{DS}=5V,I_D=2.9A		8		S
Dynamic Characteristics(4)						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, F=1.0MHz		690		pF
Output capacitance	C_{oss}			120		pF
Revers Transfer capacitance	C_{rss}			90		pF
Switching Characteristics(4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=30V,V_{GS}=10V, R_L=15Ω,R_G=2.5Ω, I_D=2A		11		nS
Turn-on Rise Time	t_r			7.4		nS
Turn-off Delay Time	$t_{d(off)}$			35		nS
Turn-off Fall Time	t_f			9.1		nS
Total Gate Charge	Q_g	V_{DS}=30V,I_D=3A, V_{GS}=10V		15.5		nC
Gate-Source Charge	Q_{gs}			3.2		nC
Gate-Drain Charge	Q_{gd}			4.7		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage(3)	V_{SD}	V_{GS}=0V,I_D=6A			1.2	V
Diode Forward Current(2)	I_S				6	A

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

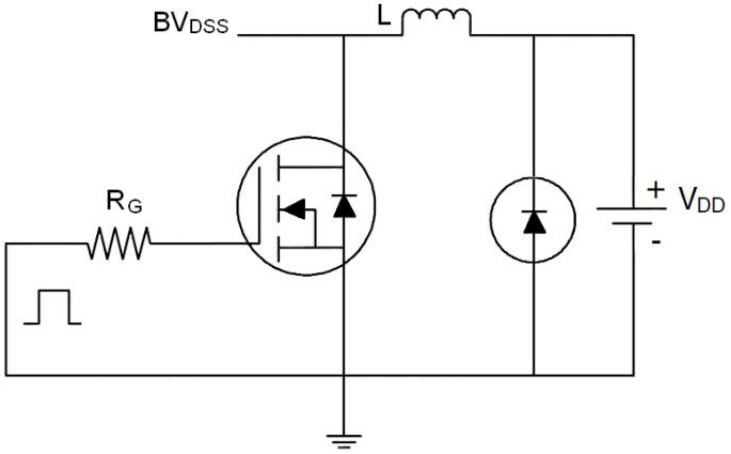
2.Surface Mounted on FR4 Board, t ≤ 10 sec.

3.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

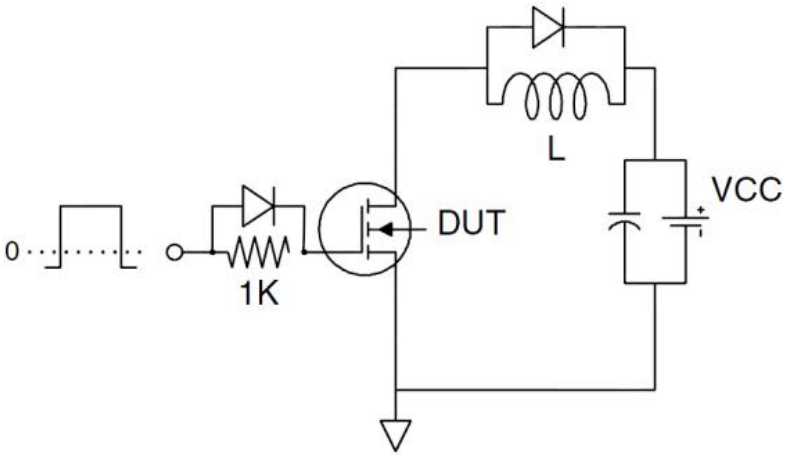
4.Guaranteed by design, not subject to production

Test Circuit

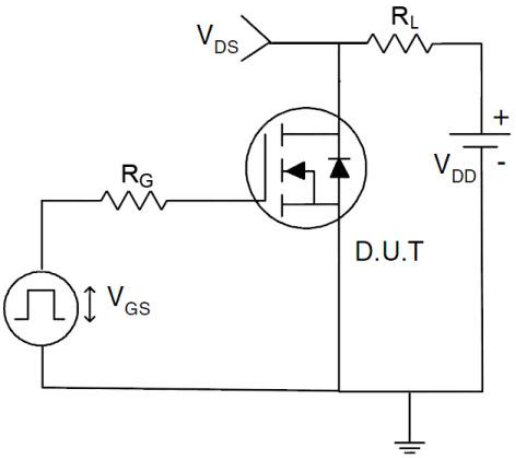
1) E_{AS} test circuit



2) Gate charge test circuit



3) Switch time test circuit



Typical Characteristics

Figure1. Source-Drain Diode Forward Voltage

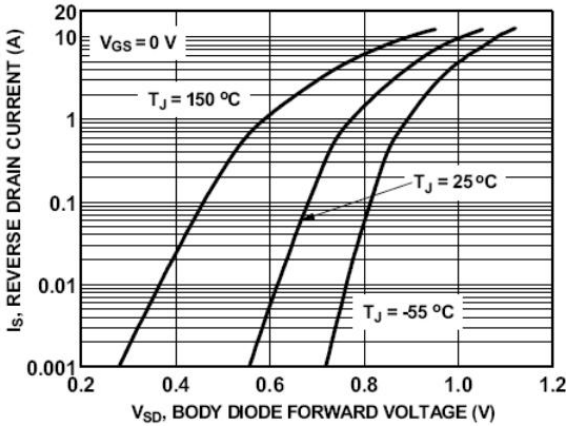


Figure2. Safe operating area

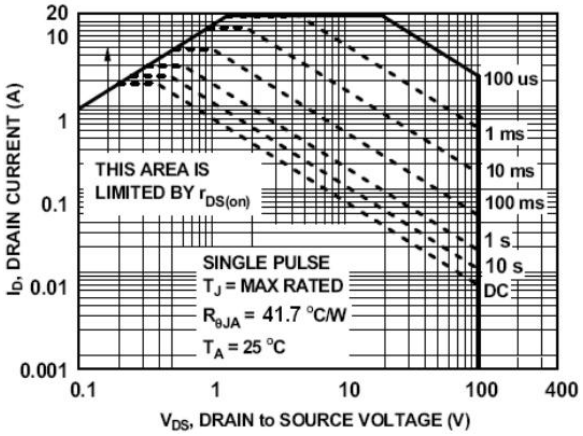


Figure3. Output characteristics

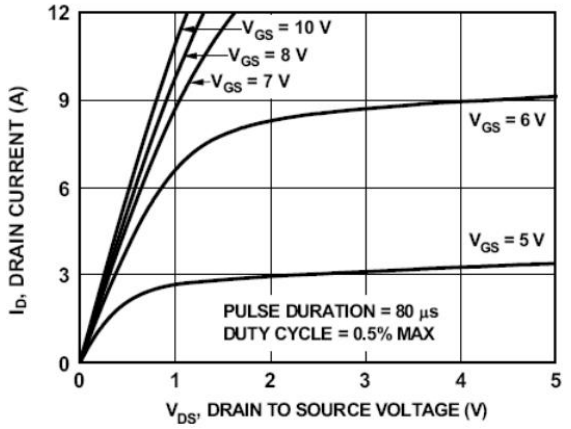


Figure4. Transfer characteristics

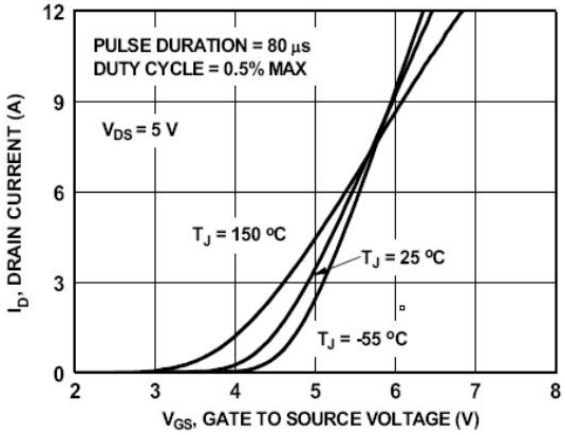


Figure5. Static drain-source on resistance

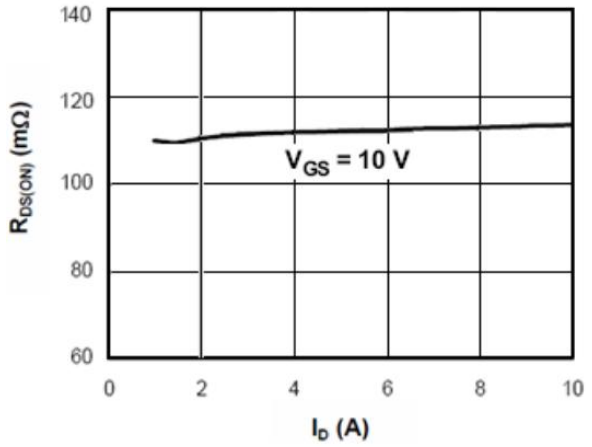


Figure6. $R_{DS(ON)}$ vs Junction Temperature

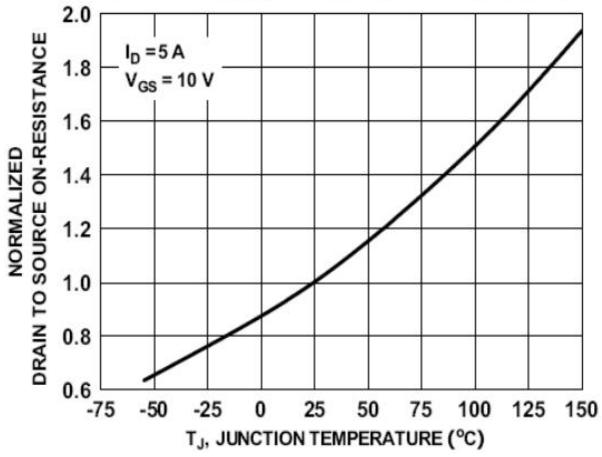


Figure7. BV_{DSS} vs Junction Temperature

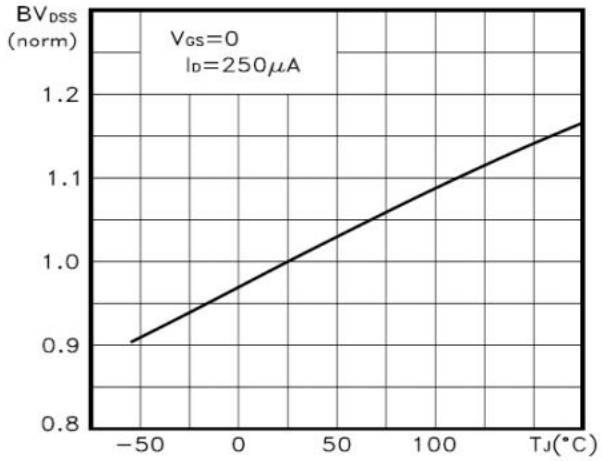


Figure8. $V_{GS(th)}$ vs Junction Temperature

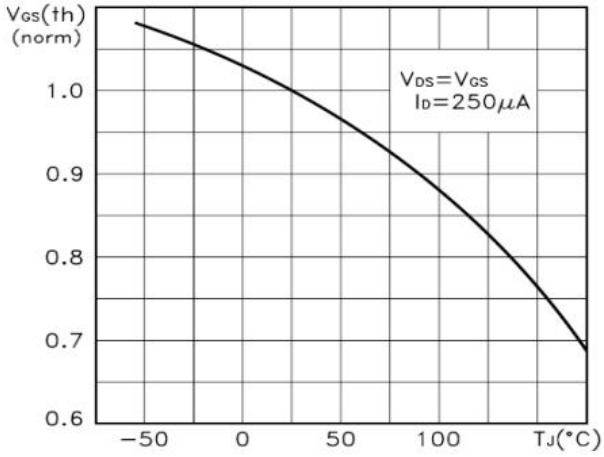


Figure9. Gate charge waveforms

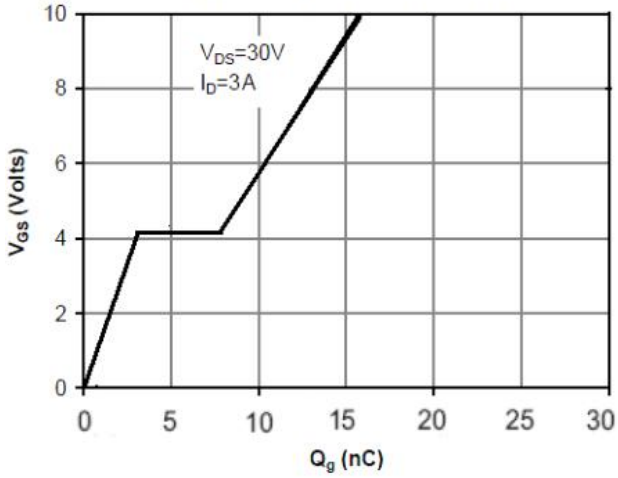
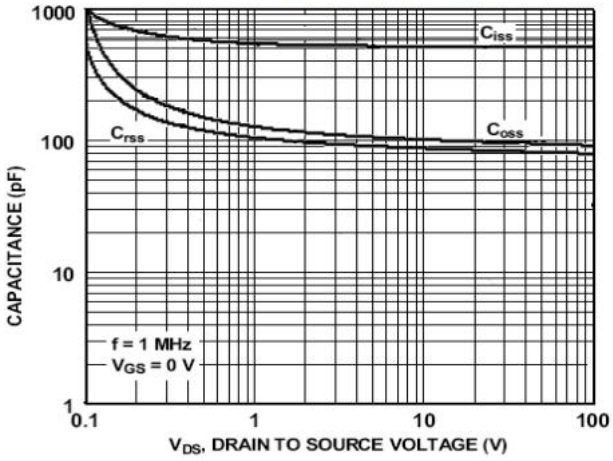


Figure10. Capacitance



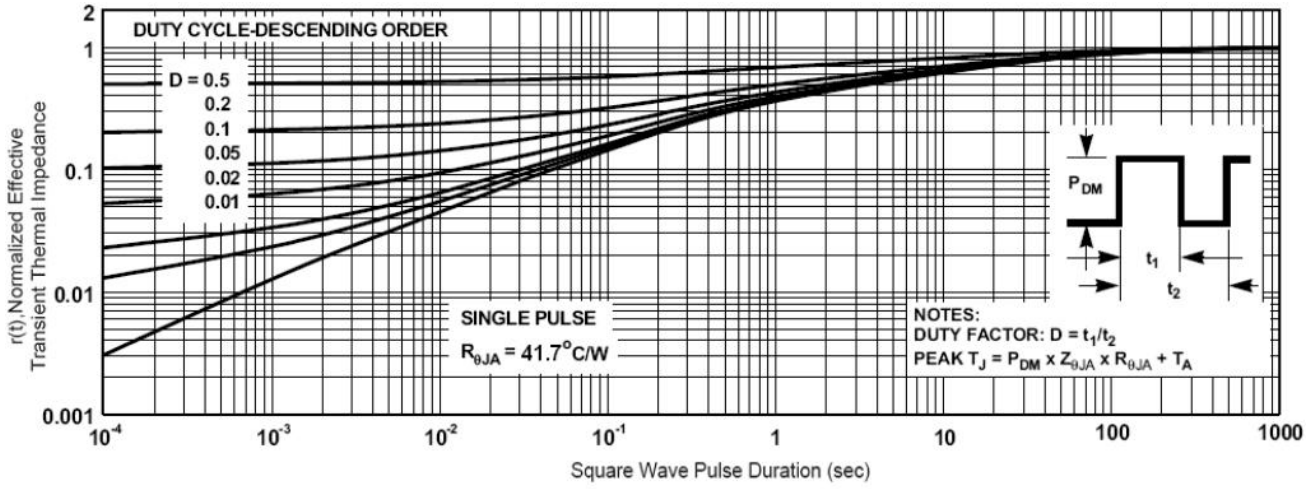


Figure11. Normalized Maximum Transient Thermal Impedance

Package Information

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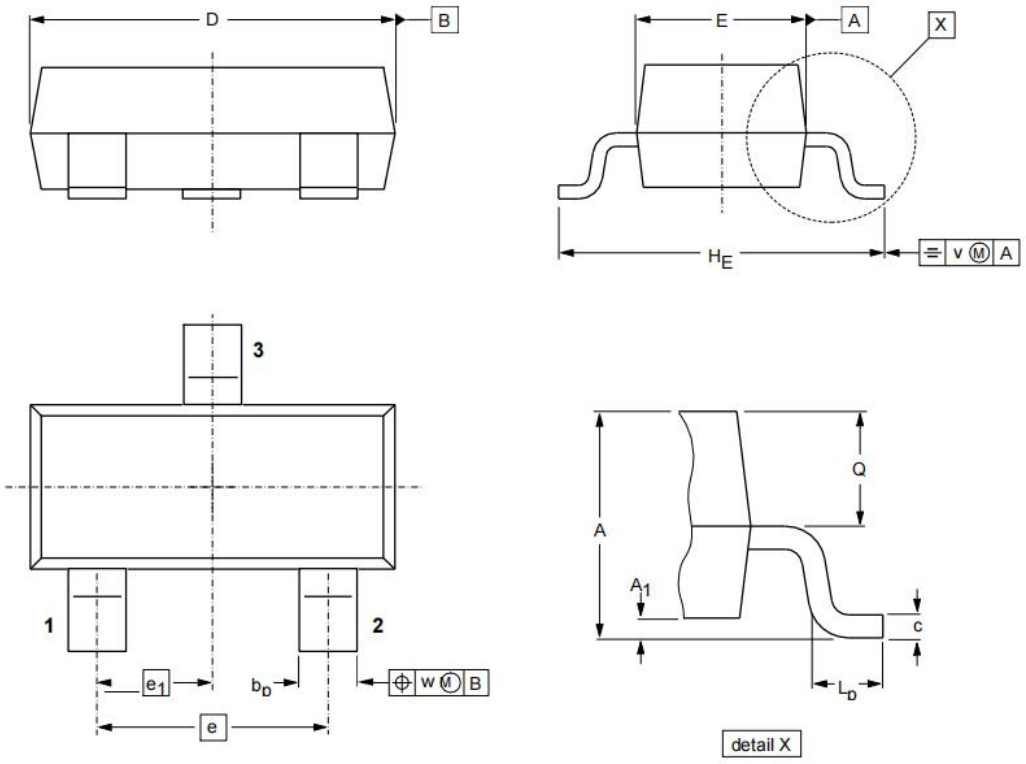
Dimensions in mm



DIMENSIONS

Unit	A	A1 Max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.7 1.5	1.9	0.95	3.00 2.65	0.45 0.15	0.55 0.45	0.2	0.1

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