富满微电子集团股份有限公司
FINE MADE MICROELECTRONICS GROUP CO., LTD.

3040K/H（文件编号：S&CIC1966）**N-channel Enhancement Mode Power MOSFET**

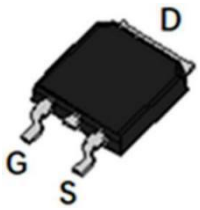
Description

Features

- Extremely Low RDS(on):
- Typ.RDS(on) = 5.8 mΩ @VGS=10 V, Id=15A
- Good stability and uniformity
- 100% avalanche tested
- Excellent package for good heat dissipation

General Description

- The 3040K/H uses advanced trench
- technology to provide excellent RDS(ON),
- low gate charge This device is suitable for
- use in UPS, power switching and
- general purpose applications.



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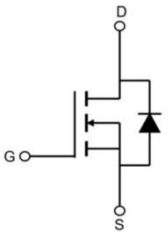
Marking and pin Assignment



Schematic Diagram

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	40	A
		T_C = 100℃	26*	A
I_{DM}	Pulsed Drain Current note1		135*	A
E_{AS}	Single Pulsed Avalanche Energy note2		80	mJ
P_D	Power Dissipation T_C = 25℃		50	W
			0.53	W/℃
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.83	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

* Drain current limited by maximum junction temperature

Electrical Characteristics (T_J=25℃ unless otherwise specified)

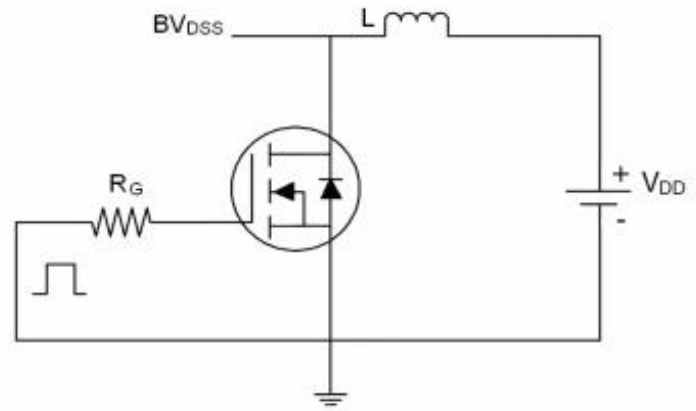
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V,	-	-	1.0	μA
I_{GSSF}	Gate Leakage Current, Forward	V_{DS}=0V, V_{GS}=20V	-	-	100	nA
I_{GSSR}	Gate Leakage Current, Reverse	V_{DS}=0V, V_{GS}=-20V	-	-	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance	V_{GS}=10V, I_D=20A	-	5.8	7.5	mΩ
		V_{GS}=4.5V, I_D=15A	-	10.5	13.5	
g_{FS}	Forward Transconductance	VDS = 5 V, ID = 15 A (Note 3)	20	-	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1.0MHz	-	1019	-	pF
C_{oss}	Output Capacitance		-	166	-	pF
C_{rss}	Reverse Transfer Capacitance		-	141	-	pF
Q_g	Total Gate Charge	V_{DS}=15V, I_D=20A, V_{GS}=10V	-	19	-	nC
Q_{gs}	Gate-Source Charge		-	6.3	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	4.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	VDD=15V, ID=12A, VGS=10V, RG=6Ohm (Note 3, 4)	-	6	-	ns
t_r	Turn-on Rise Time		-	24	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	28	-	ns
t_f	Turn-off Fall Time		-	27	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	40	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	135	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=40A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=12A,dI/dt=100A/μs	-	21	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	9	-	nC

Notes:

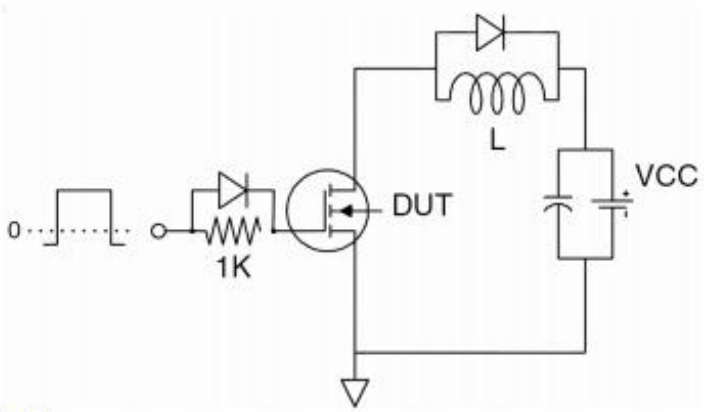
1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 0.5 mH, IAS = 15 A, VDD = 15V, RG = 25 Ω, Starting Tj = 25°C
3. ISD ≤ 40A, di/dt = 100A/us, VDD ≤ BVDSS, Staring Tj =25°C
4. Pulse Test : Pulse width ≤ 300us, Duty cycle ≤ 2%
5. Essentially independent of operating temperature

Test Circuit

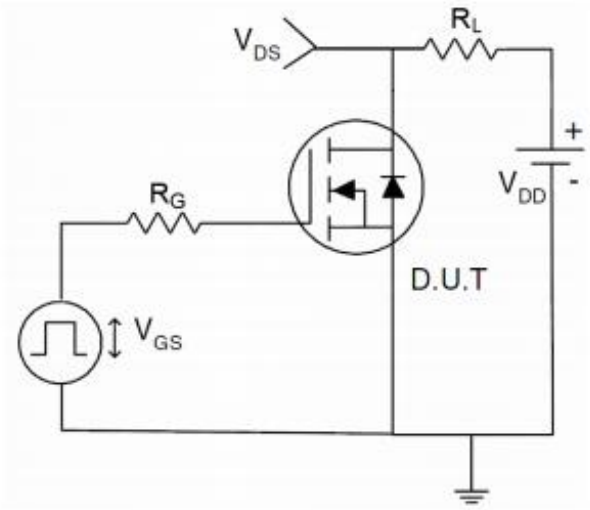
1) E_{AS} Test Circuits



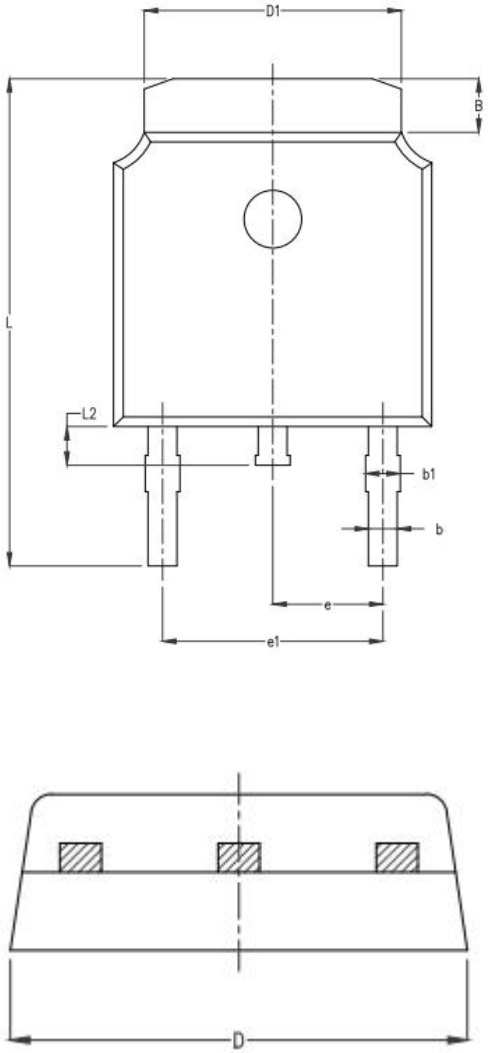
2) Gate Charge Test Circuit:

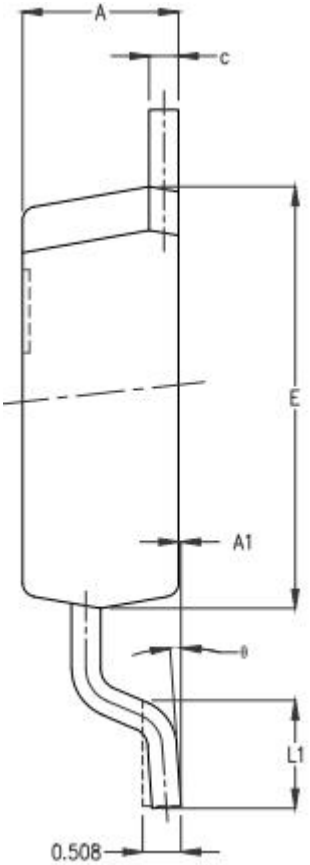


3) Switch Time Test Circuit:



TO-252 Package Information





SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.15	2.25	2.35
A1	0.00	0.06	0.12
B	0.96	1.11	1.26
b	0.59	0.69	0.79
b1	0.69	0.81	0.93
c	0.34	0.42	0.50
D	6.45	6.60	6.75
D1	5.23	5.33	5.43
E	5.95	6.10	6.25
e	2.286TYP.		
e1	4.47	4.57	4.67
L	9.90	10.10	10.30
L1	1.40	1.55	1.70
L2	0.60	0.80	1.00
θ	0°	4°	8°