

Features

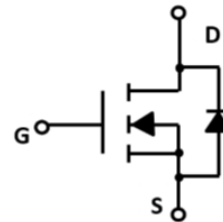
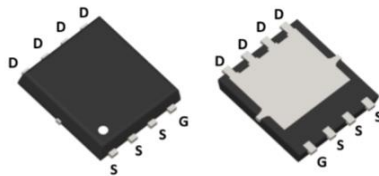
- 40V, 110A
- $R_{DS(ON)} = 2m\Omega$ (Max.) @ $V_{GS} = 10V, I_D = 20A$
- Ultra-low Gate charge(Typical 25nC)
- Low Gate Charge
- Low Reverse Recovery Charge
- Fast Switching
- Improved dv/dt Capability

Application

- Uninterruptible Power Supply(UPS)
- DC-DC Power Converter
- Synchronous Rectification

Package

PDFN5060-8L



SEG2R0N04AG

Absolute Maximum Ratings $T_C=25^\circ C$ unless otherwise specified

Symbol	Parameter	Max.	Units
V_{DSS}	Drain Source Voltage	40	V
V_{GS}	Gate to Source Voltage	± 20	V
I_D	Continuous Drain Current(@ $T_C=25^\circ C$)	110	A
I_{DM}	Drain Current Pulsed	320	A
V_{GS}	Gate to Source Voltage L=0.1mH	± 20	V
P_{tot}	Total Power Dissipation(@ $T_C=25^\circ C$)	35	W
R_{QJC}	Thermal Resistance , Junction -to -Case	3.5	$^\circ C/W$
R_{QJA}	Thermal Resistance , Junction -to -Ambient	62.5	$^\circ C/W$
T_J, T_{stg}	Junction and Storage Temperature	-55~175	$^\circ C$

*Drain current limited by maximum junction temperature

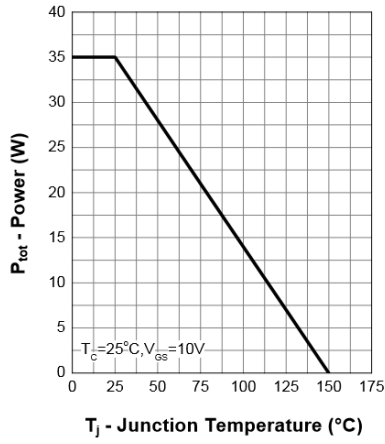
Electrical Characteristics $T_c=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 32V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.5	-	2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^{note1}	$V_{GS} = 10V, I_D = 20A$	-	1.1	2.0	m Ω
$R_{DS(on)}$	Static Drain-Source On-Resistance ^{note1}	$V_{GS} = 4.5V, I_D = 10A$	-	-	3.0	m Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = 20V, V_{GS} = 0V,$ $f = 1.0MHz$	-	4877	-	pF
C_{oss}	Output Capacitance		-	1529	-	pF
C_{rss}	Reverse Transfer Capacitance		-	28	-	pF
Q_g	Total Gate Charge	$V_{DS} = 20V, I_D = 20A,$ $V_{GS} = 10V$	-	83	-	nC
Q_{gs}	Gate-Source Charge		-	19	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	17	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 20V, I_D = 20A$ $R_G = 4.5\Omega, R_L = 1\Omega$ $V_{GEN} = 10V$	-	13	-	ns
t_r	Turn-On Rise Time		-	45	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	70	-	ns
t_f	Turn-Off Fall Time		-	39	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	110	A
V_{SD}	Drain to Source Diode Forward Voltage ^{note1}	$V_{GS} = 0V, I_{SD} = 20A$	-	-	1.3	V
t_{rr}	Body Diode Reverse Recovery Time	$V_{GS} = 0V, I_{SD} = 20A,$	-	64	-	ns
Q_{rr}	Body Diode Reverse Recovery Time Charge	$di/dt = 100A/\mu s$	-	86	-	nC

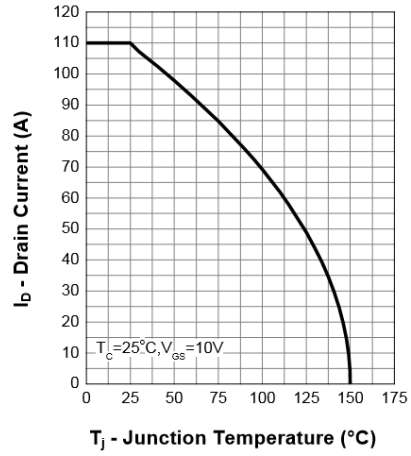
Notes:

1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
2. Guaranteed by design, not subject to production testing

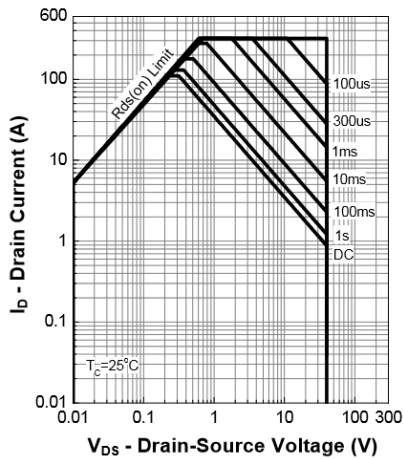
Power Capability



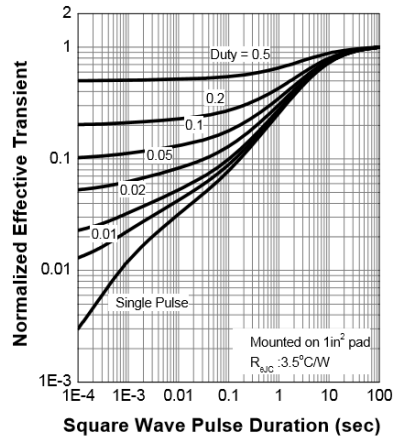
Current Capability



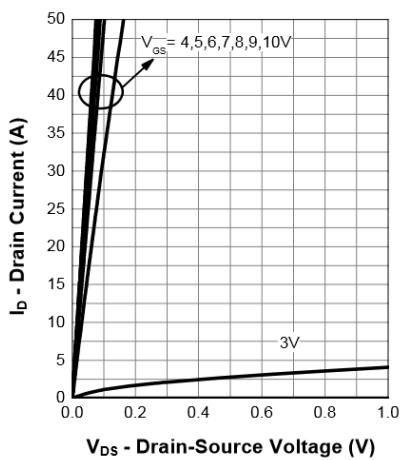
Safe Operation Area



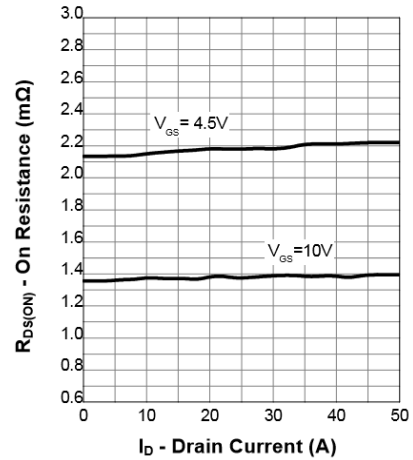
Transient Thermal Impedance

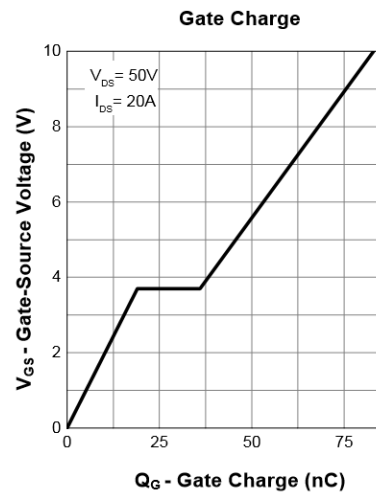
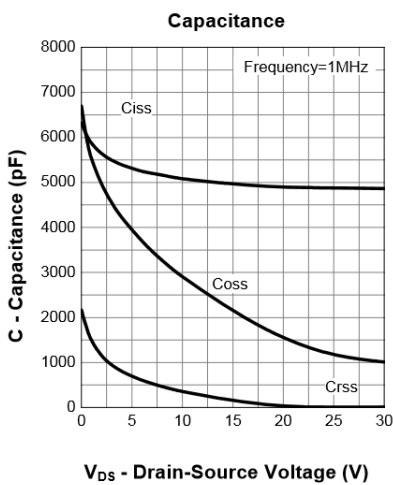
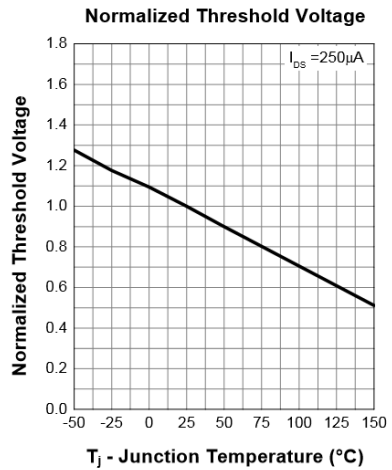
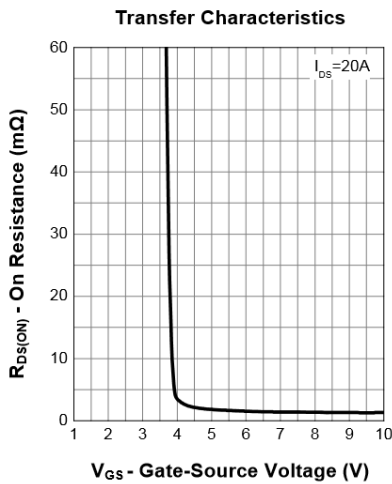
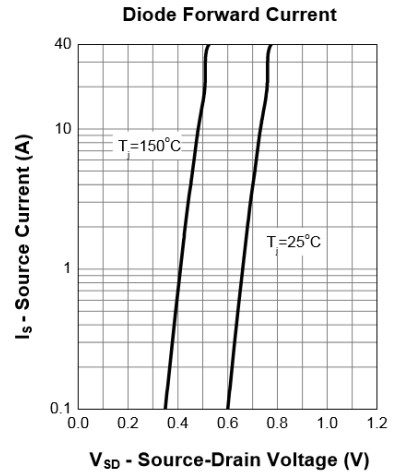
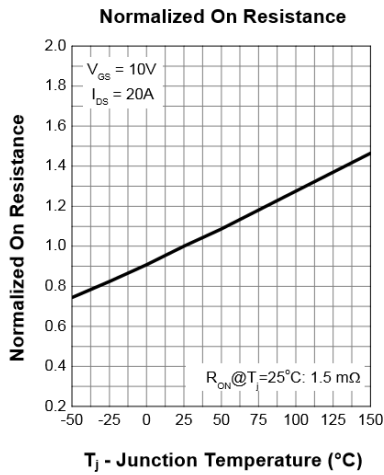


Output Characteristics



On Resistance





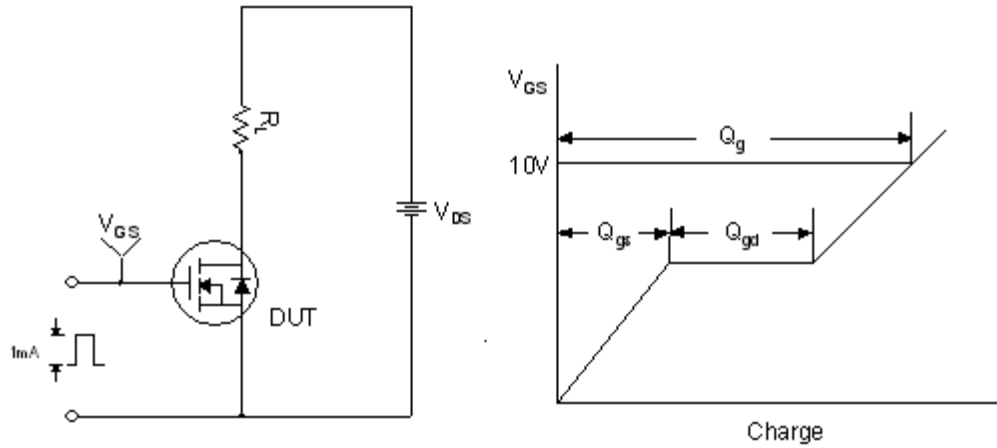


Figure 1. Gate Charge Test Circuit & Waveform

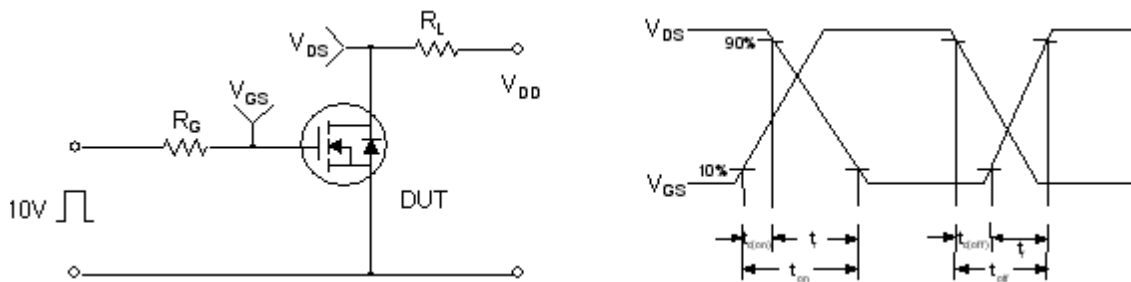


Figure 2. Resistive Switching Test Circuit & Waveforms

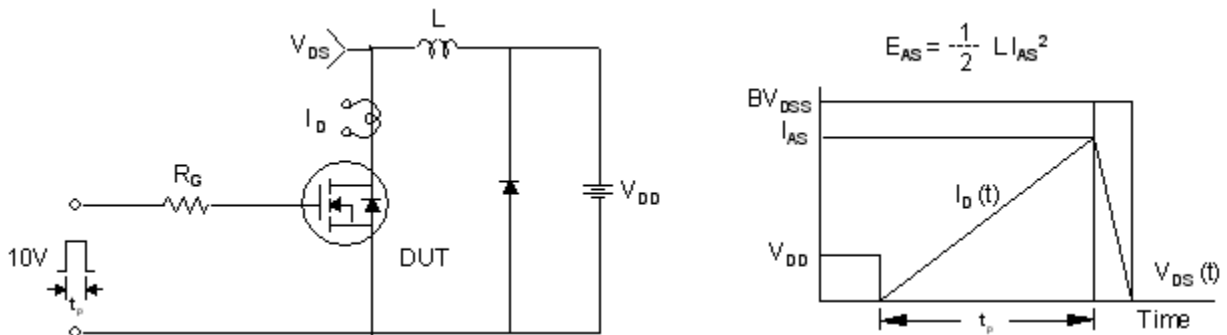


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

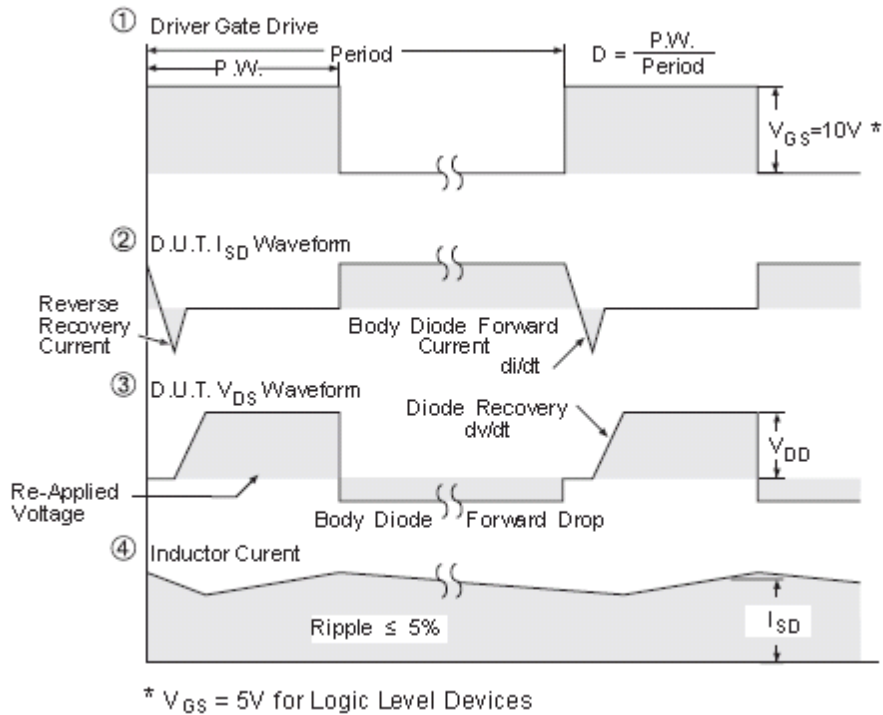
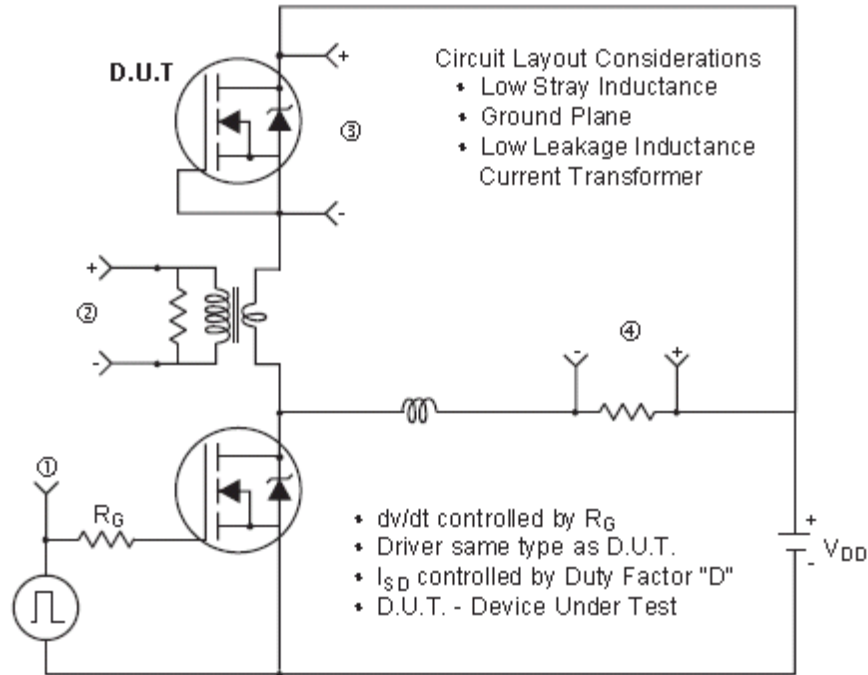
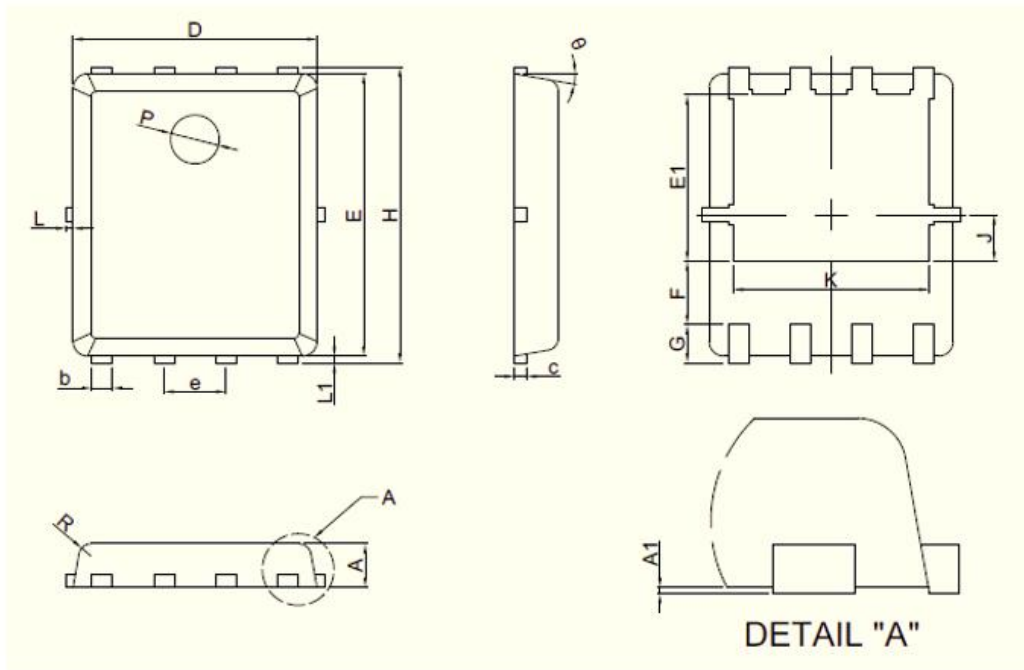


Figure 4. Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

PDFN5x6 - 8L Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	0.80	1.00
A1	0.00	0.05
b	0.35	0.49
c	0.254REF	
D	4.90	5.10
F	1.40REF	
E	5.70	5.90
e	1.27BSC	
H	5.95	6.20
L1	0.10	0.18
G	0.60REF	
K	4.00REF	
L	-	0.15
J	0.95BSC	
P	1.00REF	
E1	3.40REF	
theta	6°	14°
R	0.25REF	

SEG2R0N04AG Product Description

Silicon N-Channel MOSFET



NOTE:

1. We strongly recommend customers check carefully on the trademark when buying our product, if there is any question, please don't be hesitate to contact us.
2. Please do not exceed the absolute maximum ratings of the device when circuit designing.
3. Winsemi Microelectronics Co., Ltd reserved the right to make changes in this specification sheet and is subject to change without prior notice.

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