Description

ELV608R9ND N-channel Enhancement Mode Power MOSFET

Features	Application
60V, 80A	Load Switch
$R_{DS(ON)}$=8.9mΩ @ V_{GS}=10V	PWM Application
Advanced Trench Technology	Power management
Provide Excellent $R_{DS(ON)}$ and Low Gate Charge	
Lead free product is acquired	

RoHS
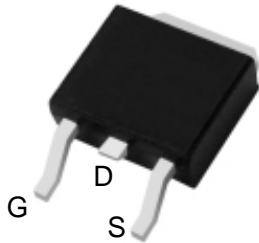
TO-252 top view **Marking and pin Assignment** **Schematic Diagram**
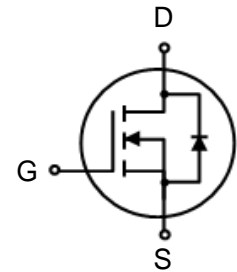
Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	TUBE (PCS)	Inner BOX (PCS)	Per Carton (PCS)
ELV608R9ND	ELV608R9ND	TAPING	TO-252	13inch	2500	25000

Absolute Maximum Ratings (T$_C$=25℃ unless otherwise specified)

| Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	80	A
		T_C = 100℃	54	A
I_{DM}	Pulsed Drain Current [note1]		320	A
E_{AS}	Single Pulsed Avalanche Energy [note2]		195	mJ
P_D	Power Dissipation	T_C = 25℃	125	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.0	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

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	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	2	-	4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}=10V, I_D=20A	-	8.9	10.4	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1.0MHz	-	2727	-	pF
C_{oss}	Output Capacitance		-	191	-	pF
C_{rss}	Reverse Transfer Capacitance		-	164	-	pF
Q_g	Total Gate Charge	V_{DS}=48V, I_D=30A, V_{GS}=10V	-	61	-	nC
Q_{gs}	Gate-Source Charge		-	11	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	21	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=30V,I_D=30A, R_{GEN}=4.7Ω, V_{GS}=10V	-	13	-	ns
t_r	Turn-on Rise Time		-	45	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	61	-	ns
t_f	Turn-off Fall Time		-	18	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=45A	-	-	1.4	V
trr	Body Diode Reverse Recovery Time	T_J=25℃ I_F=30A,dI/dt=100A/μs	-	13	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	5	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25℃, V_{DD}=30V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=27.9A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%
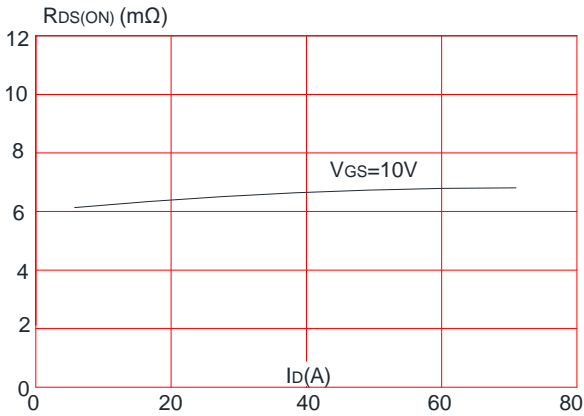
Typical Performance Characteristics
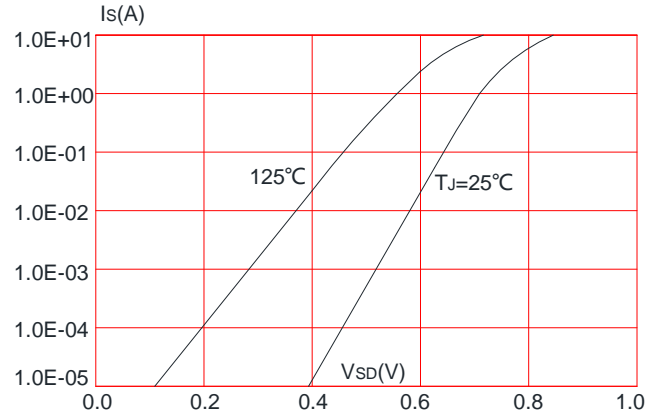
Figure1: Output Characteristics
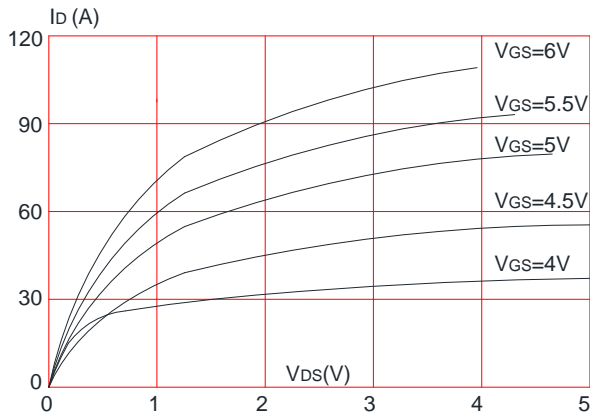
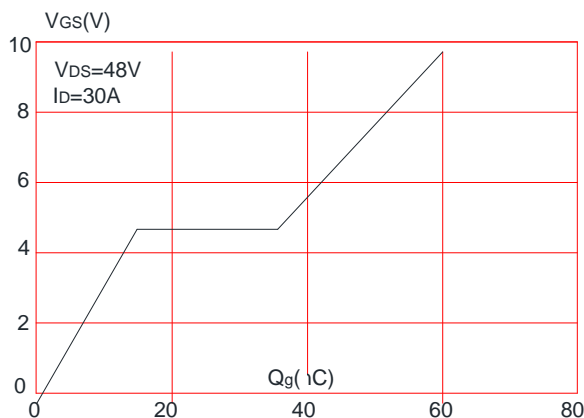**Figure 2:** Typical Transfer Characteristics
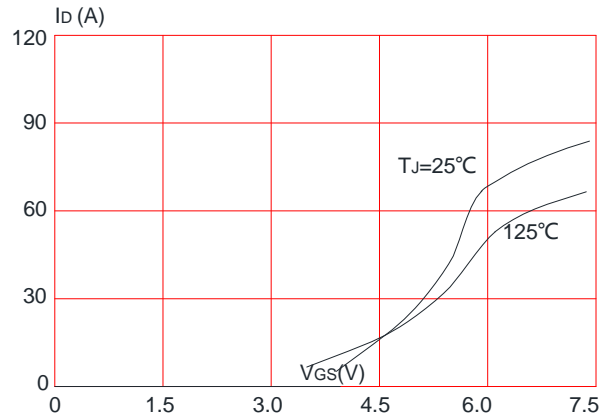
Figure 3: On-resistance vs. Drain Current
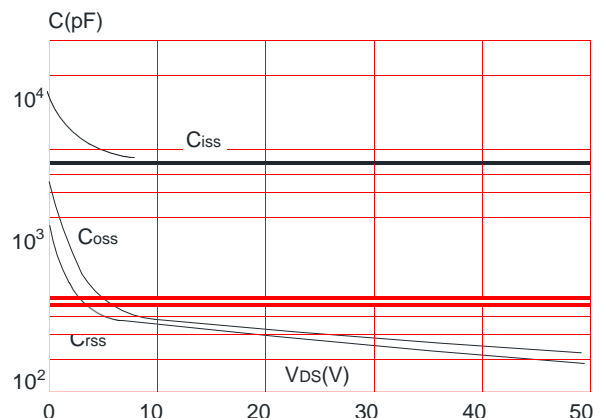

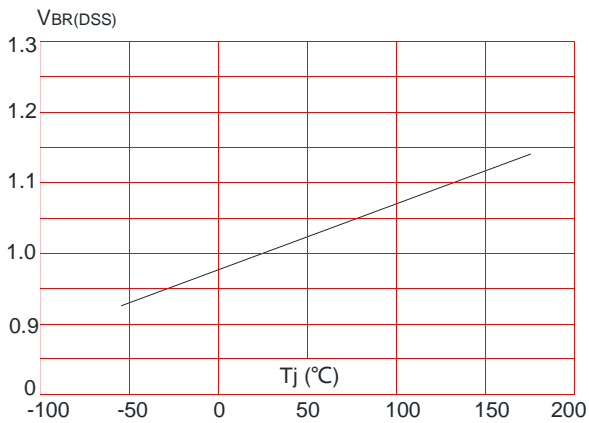**Figure 4:** Body Diode Characteristics

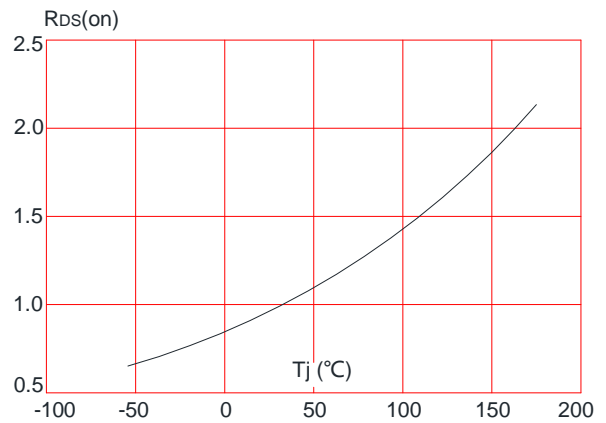**Figure 5:** Gate Charge Characteristics
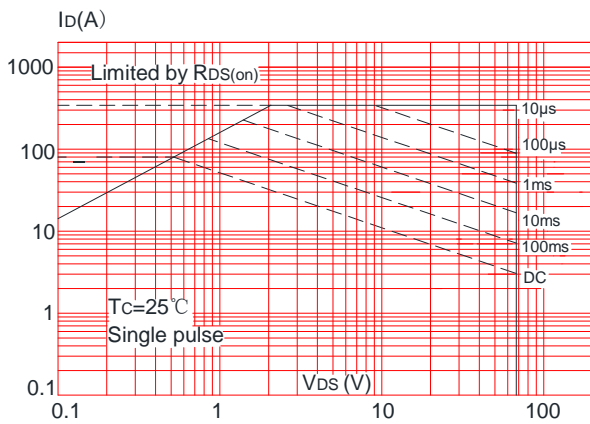

Figure 6: Capacitance Characteristics

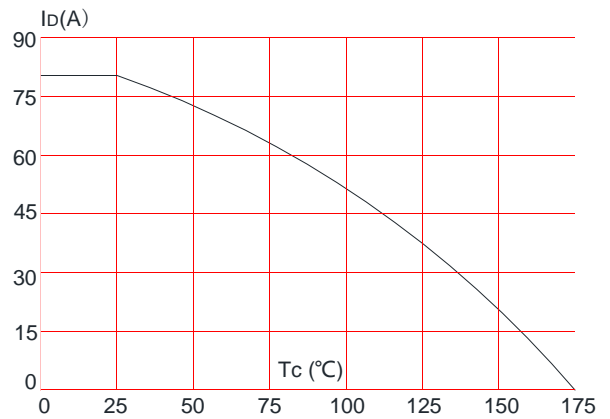**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

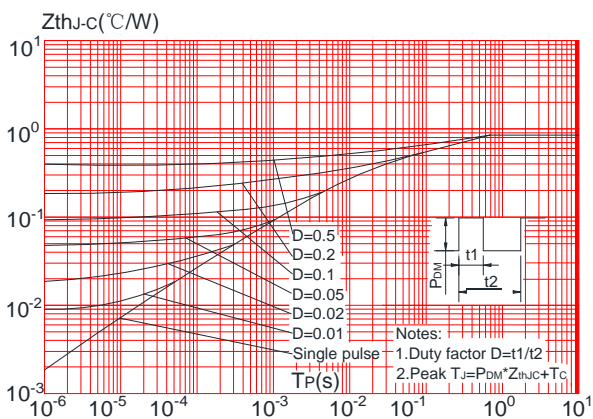**Figure 8:** Normalized on Resistance vs. Junction Temperature

Figure 9: Maximum Safe Operating Area

Figure 10: Maximum Continuous Drain Current vs. Case Temperature

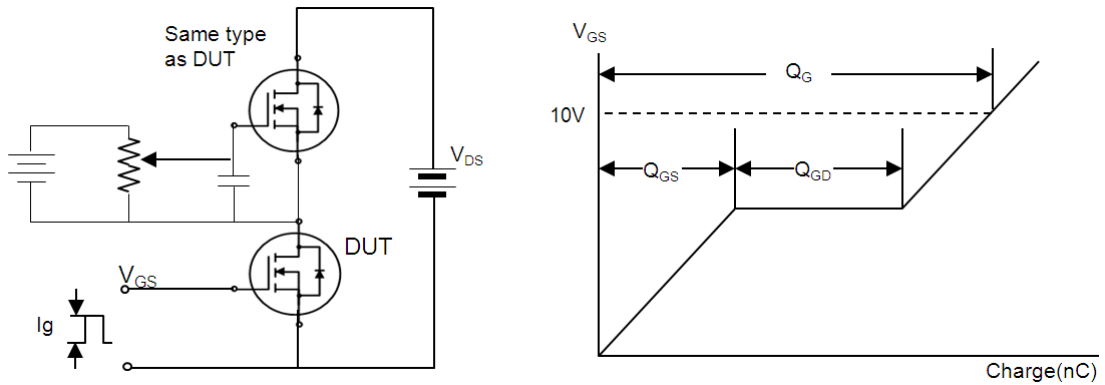**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

Notes:
1.Duty factor D=t1/t2
2.Peak $T_J = P_{DM} * Z_{thJC} + T_C$

Test Circuit

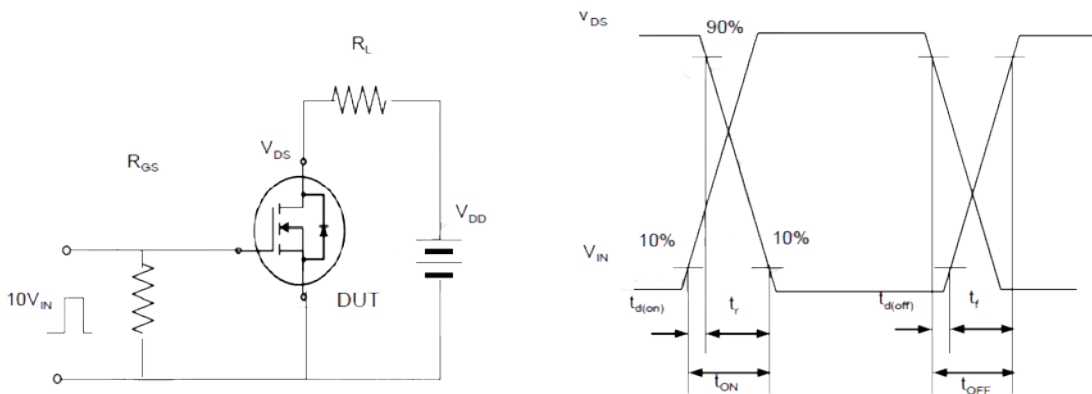**Figure1:Gate Charge Test Circuit & Waveform**

Figure 2: Resistive Switching Test Circuit & Waveforms
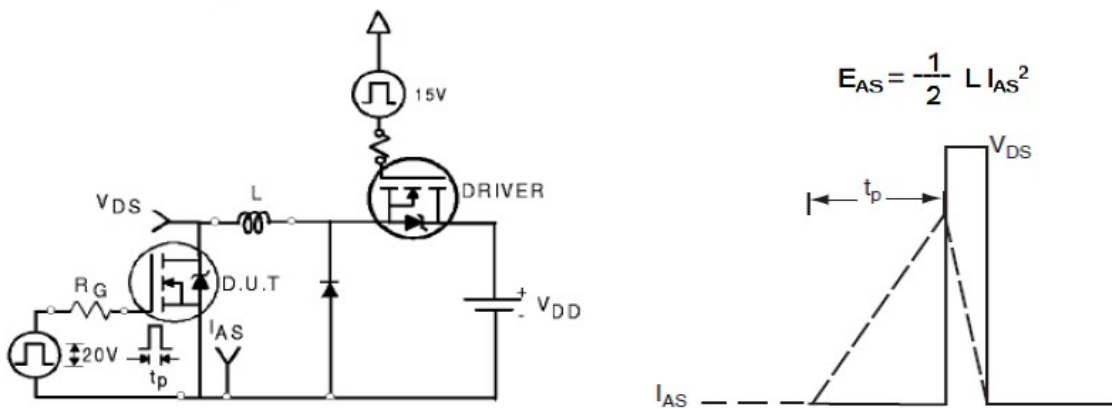
Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Package Mechanical Data-TO-252
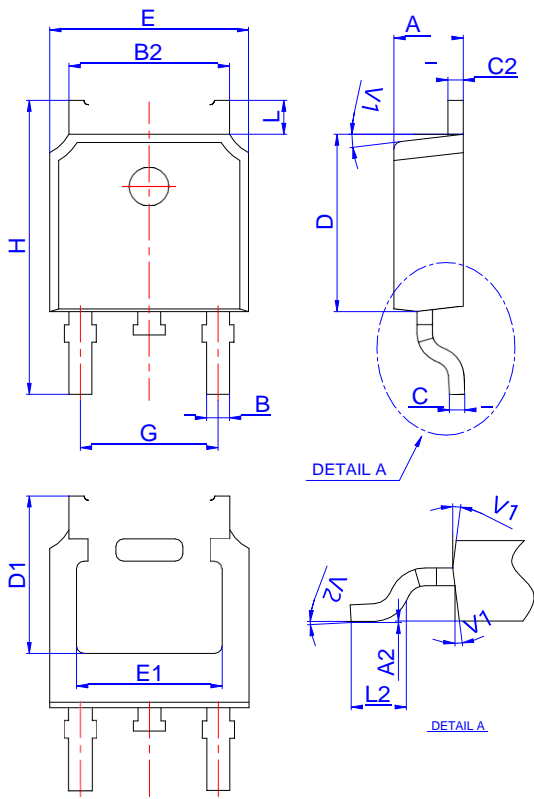
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Product Naming Rules

ELV X X X R X N X

公司代号

低压MOS产品

漏源电压值，采用2位数字；
例如：04代表40V，10代表100V

导通电阻：R65代表0.65毫欧；6R5代表6.5毫欧；
100代表10毫欧，101代表100毫欧

沟道极性标识：N代表N型，P代表P型

封装外形标识，例如：T：TO-220；
D：TO-252；S：TO-263