

Description

EHV600520RND N-channel Enhancement Mode Power MOSFET

Features

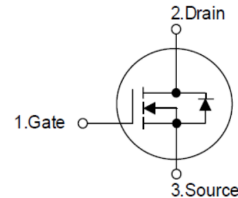
650V,7A
 $R_{DS(ON)}=520\text{m}\Omega @ V_{GS}=10\text{V}$
 Fast switching capability
 Robust design with better EAS performance
 Excellent stability and uniformity

Application

High Performance Charger / Adapter
 LED Lighting Power
 TV Power
 Aux Power etc



TO-252



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	TUBE (PCS)	Inner BOX (PCS)	Per Carton (PCS)
EHV600520RND	EHV600520RND	TAPING	TO-252	13inch	2500	25000

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units
V _{DSS}	Drain-Source Voltage	600	V
V _{GSS}	Gate-Source Voltage	±30	V
I _D	Continuous Drain Current	T _C = 25°C	7
		T _C = 100°C	3.2
I _{DM}	Pulsed Drain Current ^{note1}	24	A
E _{AS}	Single Pulsed Avalanche Energy ^{note2}	112	mJ
P _D	Power Dissipation	T _C = 25°C	65
R _{θJC}	Thermal Resistance, Junction to Case	1.9	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°C

Electrical Characteristics (T_J=25°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 =250μA	600	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =600V, V _{GS} =0V	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±30V	-	-	±100	nA

On Characteristics

V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.5	-	3.9	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =3A	-	520	600	mΩ

Dynamic Characteristics

C _{iss}	Input Capacitance	V _{DS} =400V, V _{GS} =0V, f=100KHz	-	338	-	pF
C _{oss}	Output Capacitance		-	25	-	pF
C _{rss}	Reverse Transfer Capacitance		-	1	-	pF
Q _g	Total Gate Charge	V _{DD} =400V, I _D =3.5A, V _{GS} =10V	-	5.0	-	nC
Q _{gs}	Gate-Source Charge		-	16.8	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	6.1	-	nC

Switching Characteristics

t _{d(on)}	Turn-on Delay Time	V _{DD} =400V, I _D =3.5A, R _{GEN} =2Ω	-	22	-	ns
t _r	Turn-on Rise Time		-	11	-	ns
t _{d(off)}	Turn-off Delay Time		-	29	-	ns
t _f	Turn-off Fall Time		-	12	-	ns

Drain-Source Diode Characteristics and Maximum Ratings

V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =8A	-	-	1.4	V
t _{rr}	Body Diode Reverse Recovery Time	V _R =400V I _F =3.5A, di/dt=100A/μs	-	245	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	2.0	-	uC
I _{rrm}	Peak Reverse Recovery Current		-	15	-	A

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

2. L=60mH, V_{DD}=60V, R_G=25ohm, T_J=25°C

3. I_S =8A, di/dt ≤100A/us, V_{DD}≤BV_{DS}, Start T_J=25°C

Typical Performance Characteristics

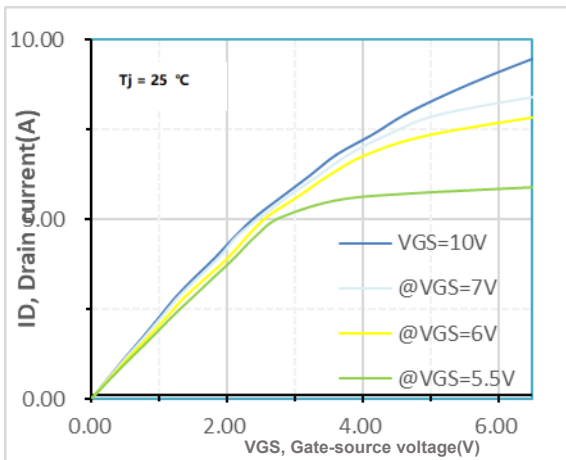


Figure 1. Typ. output characteristics

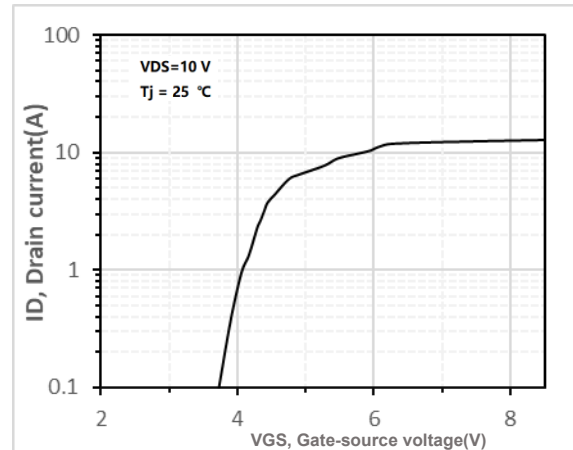


Figure 2. Typ. transfer characteristics

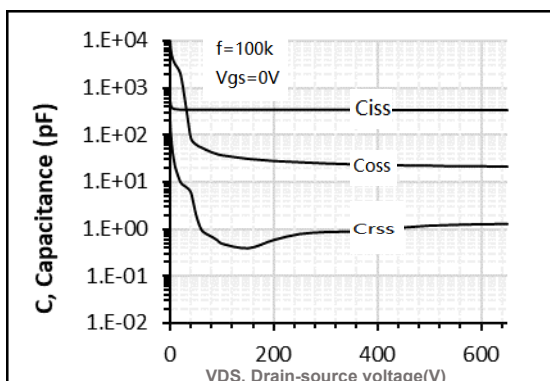


Figure 3. Typ. capacitances

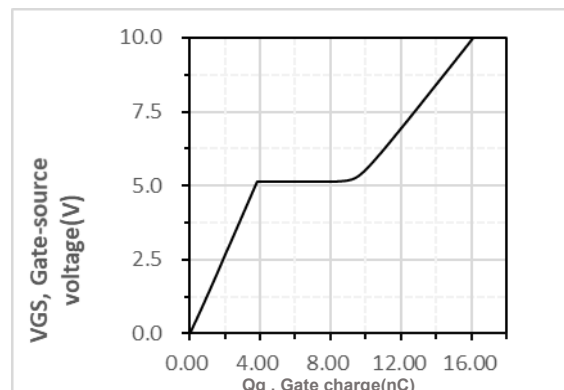


Figure 4. Typ. gate charge

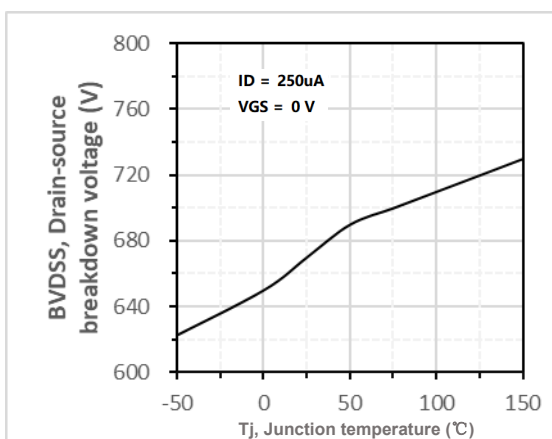


Figure 5. Drain-source breakdown voltage

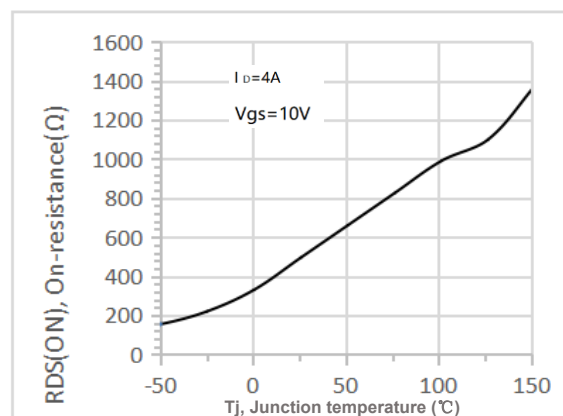


Figure 6. Drain-source on-state resistance

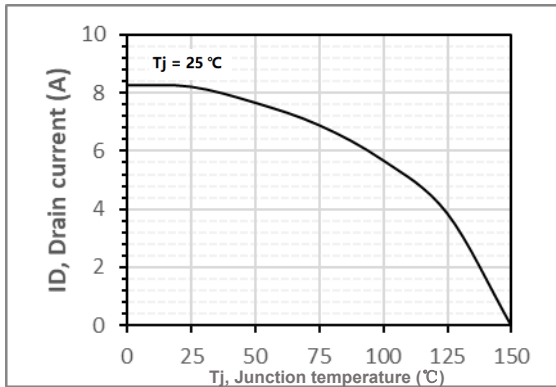


Figure 7. Threshold voltage

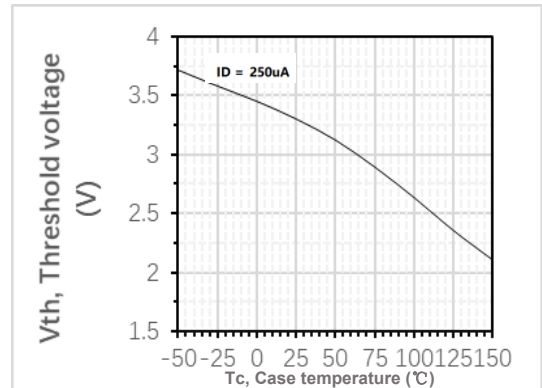


Figure 8. Drain current

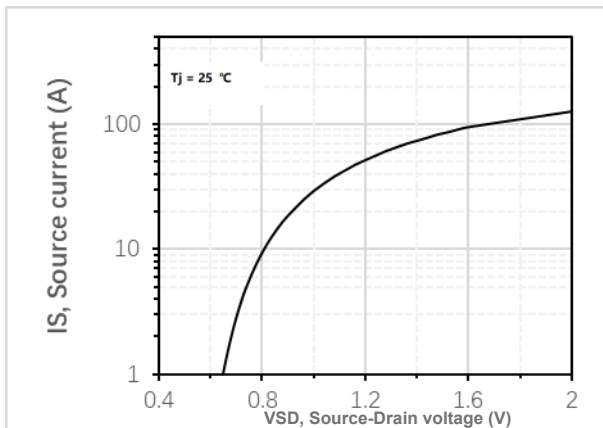


Figure 9. Forward characteristic of body diode

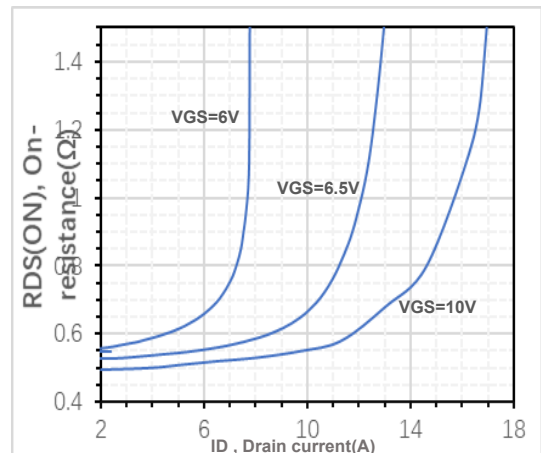


Figure 10. Drain-source on-state resistance

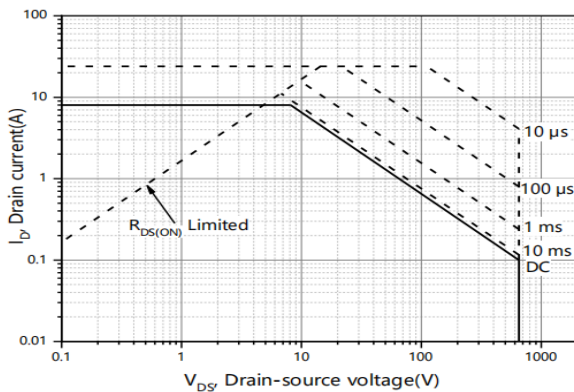
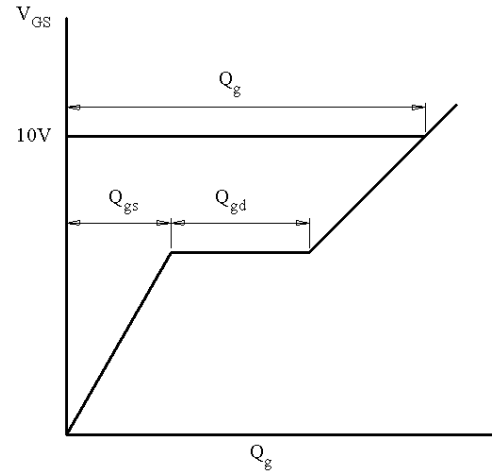
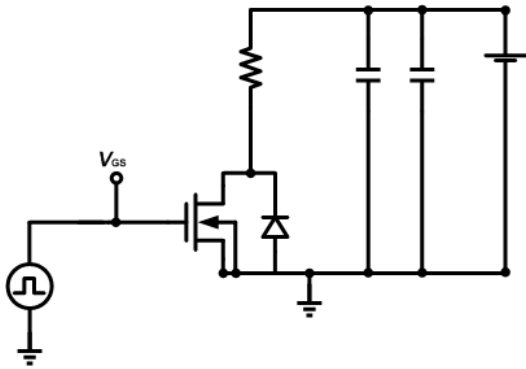


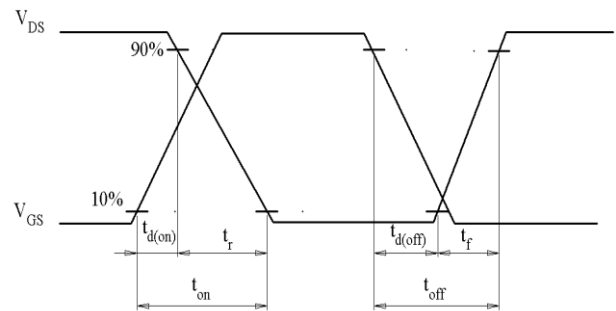
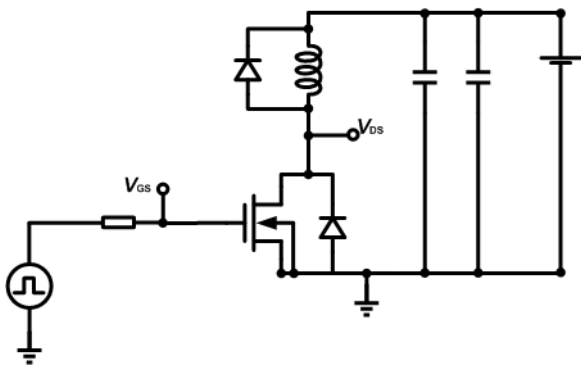
Figure 11. Safe operation area Tc=25 °C

Test Circuit

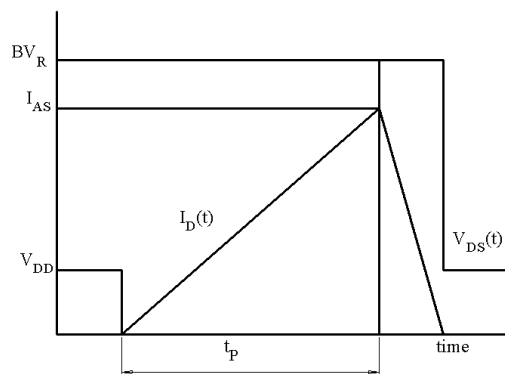
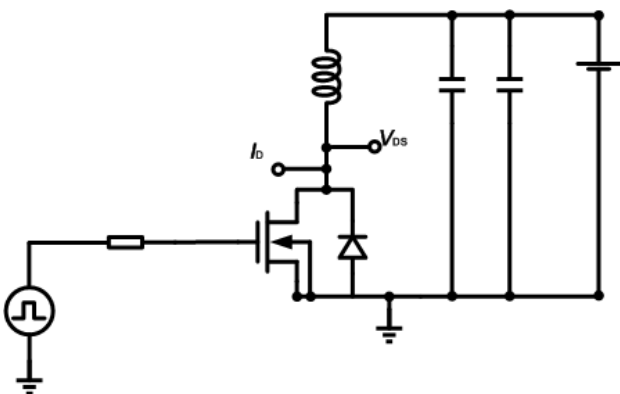
1. Gate Charge Test Circuit & Waveform



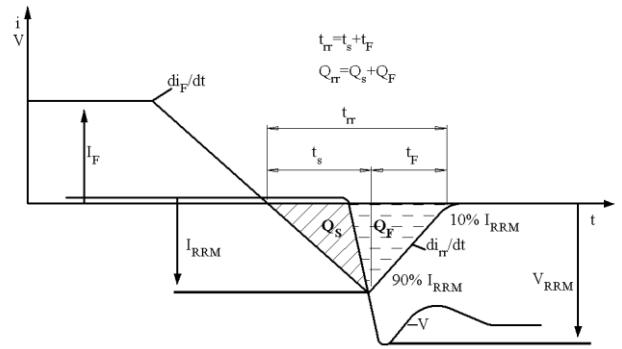
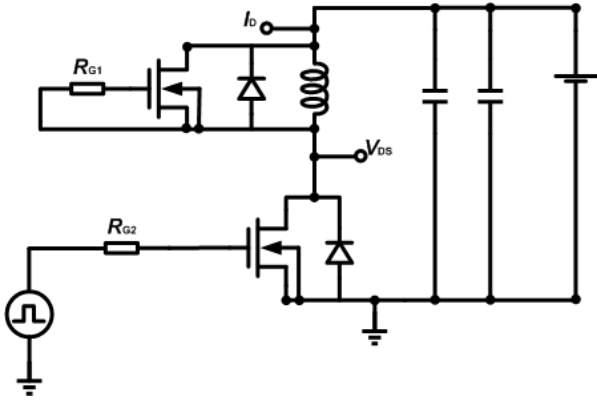
2. Switch Time Test Circuit



3. Unclamped Inductive Switching Test Circuit & Waveforms



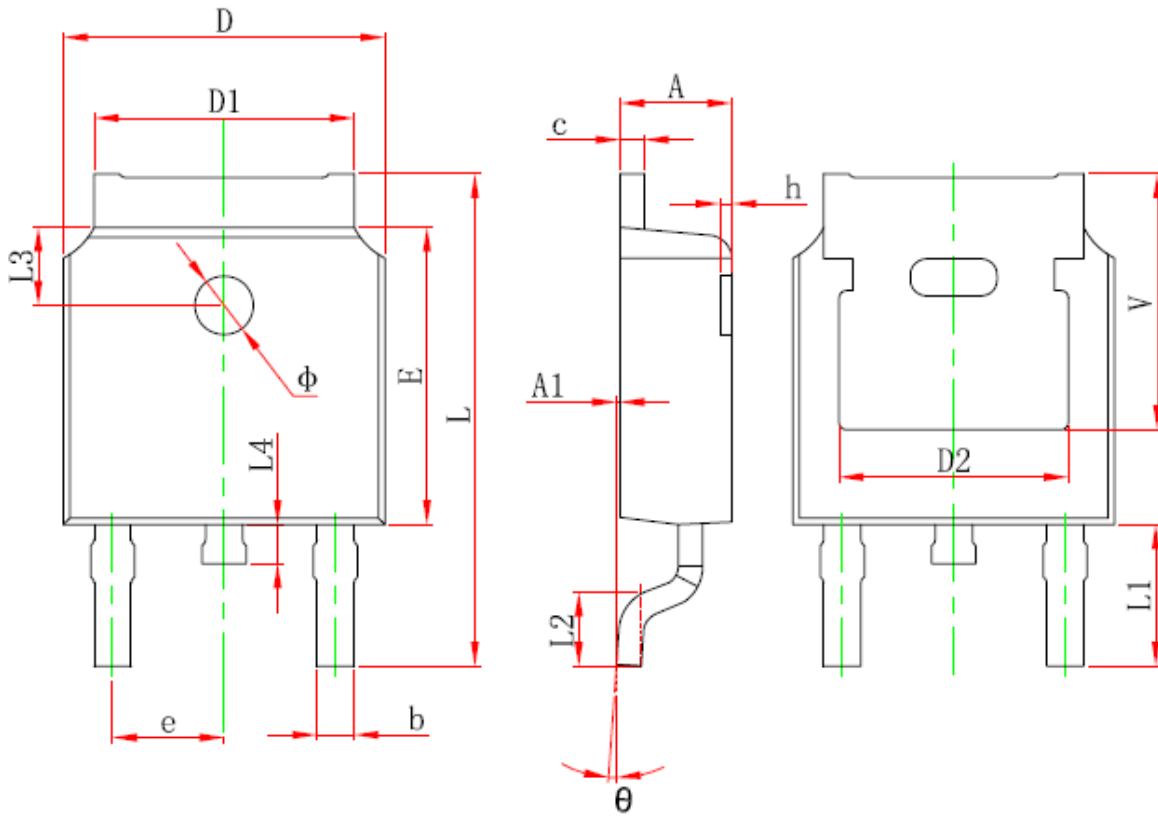
4. Test Circuit and Waveform for Diode Characteristics



Package Mechanical Data-TO-250

TO-252

Unit: mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
phi	1.100	1.300	0.043	0.051
theta	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	

Product Naming Rules

