



650V 1.5Ω N-Channel Power MOSFET

CM07N65-T0252

Data Sheet

Version: V0.3

Features

- Originative New Design
- Superior Avalanche Rugged Technology
- Robust Gate Oxide Technology
- Very Low Intrinsic Capacitances
- Excellent Switching Characteristics
- Extended Safe Operating Area

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Applications

- Switching Mode Power Supply
- HID Lamp
- BLDC Motor

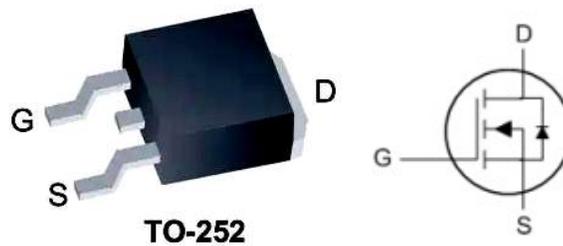
1 Description

The CRM07N65-252 uses advanced MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality.

2. Product Summary

BVDSS	RDSON	ID
650V	1.5Ω	7A

3 TO252 Pin Description



4 Absolute Ratings ($T_A = 25^\circ\text{C}$ in a TO-252 package unless otherwise noted)

Parameter	Symbol	Value		Units
Drain-Source Voltage	V_{DS}	+650		V
Gate-Source Voltage	V_{GS}	± 30		V
Junction Temperature Maximum	T_{JMAX}	150		$^\circ\text{C}$
Storage Temperature	$T_{Storage}$	-25 to 150		$^\circ\text{C}$

5 Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$

6 Electrical Characteristics

Static ($T_J=25^\circ\text{C}$ unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	650	---	---	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	---	---	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 650V, V_{GS} = 0V$	---	---	10	μA
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 1A$	---	1.48	1.7	Ω
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	---	4.5	V
Dynamic ($T_J=25^\circ\text{C}$ unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1\text{MHz}$	---	1007	---	pF
Output Capacitance	C_{oss}		---	116	---	
Reverse Transfer Capacitance	C_{rss}		---	12.5	---	
Total Gate Charge	Q_g	$V_{DS} = 480V, I_D = 7A, V_{GS} = 10V$	---	28	---	nC
Gate-Source Charge	Q_{gs}		---	4.6	---	
Gate-Drain Charge	Q_{gd}		---	12.4	---	
Turn-on delay time	$T_{d(on)}$	$V_{DS} = 300V, I_D = 7A, V_{GS} = 10V, R_G = 25\Omega$	---	19	---	nS
Rise time	T_r		---	49	---	
Turn-off delay time	$T_{d(off)}$		---	79	---	
Fall time	T_f		---	69	---	
Reverse Diode Characteristics						
Continuous Source Current	I_S	$V_{GS} = 0V, V_{DS} \text{Open}, f=1\text{MHz}$	---	---	7	A
Diode Forward Voltage	V_{SD}	$I_S = 7A, V_{GS} = 0V$	---	---	1.5	V
Reverse Recovery Time	t_{rr}	$I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A$	---	60	---	ns
Reverse Recovery Charge	Q_{rr}		---	0.2	---	nC

7 Typical Electrical Characteristics

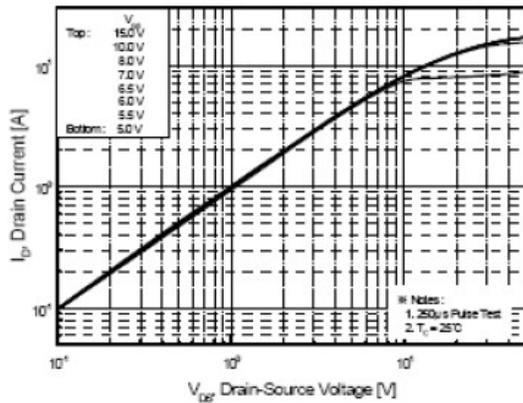


Figure 1. On-Region Characteristics

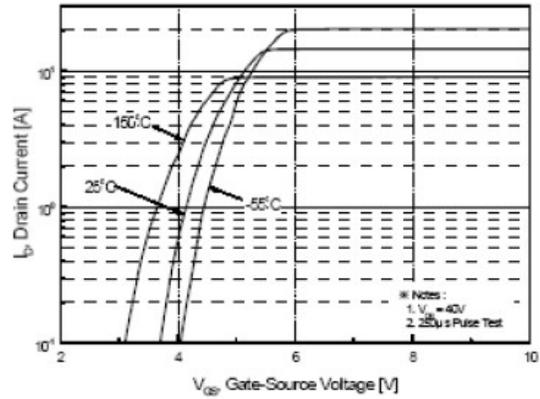


Figure 2. Transfer Characteristics

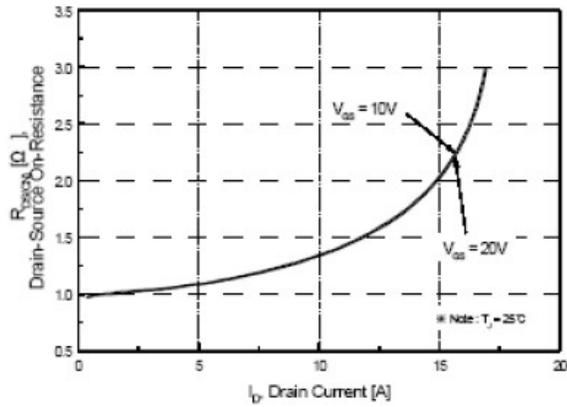


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

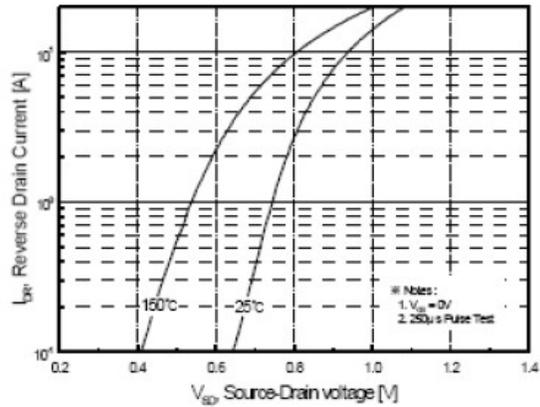


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

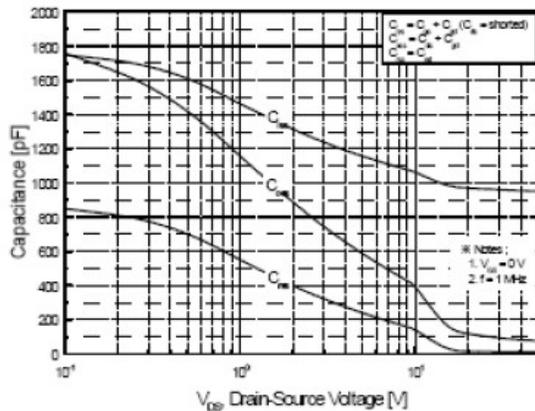


Figure 5. Capacitance Characteristics

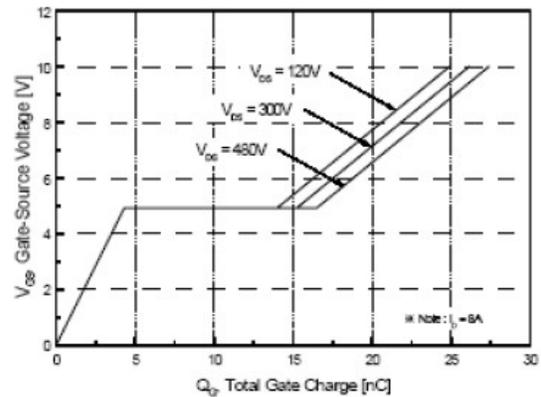


Figure 6. Gate Charge Characteristics

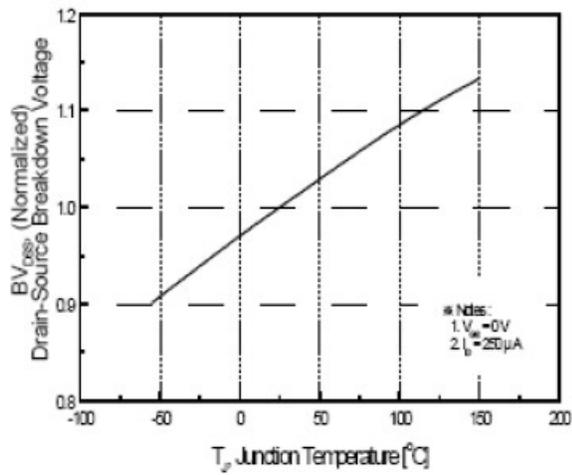


Figure 7. Breakdown Voltage Variation vs Temperature

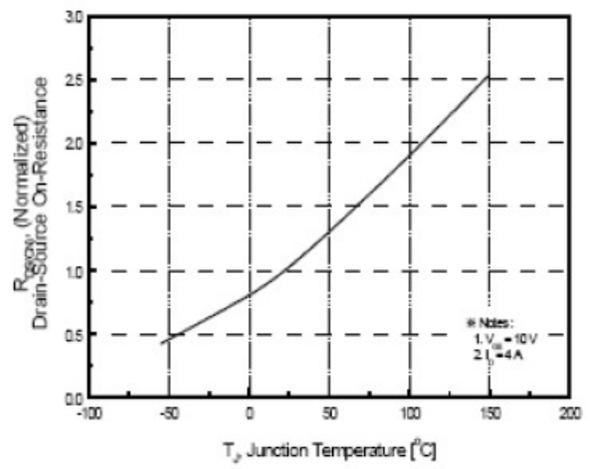
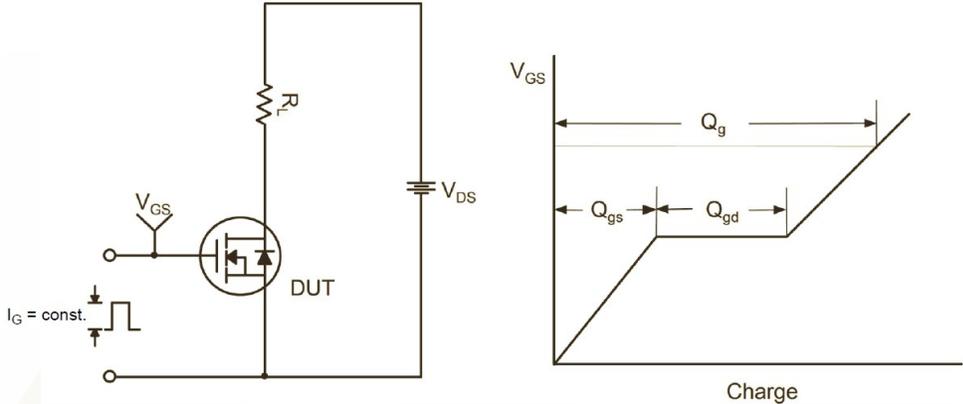
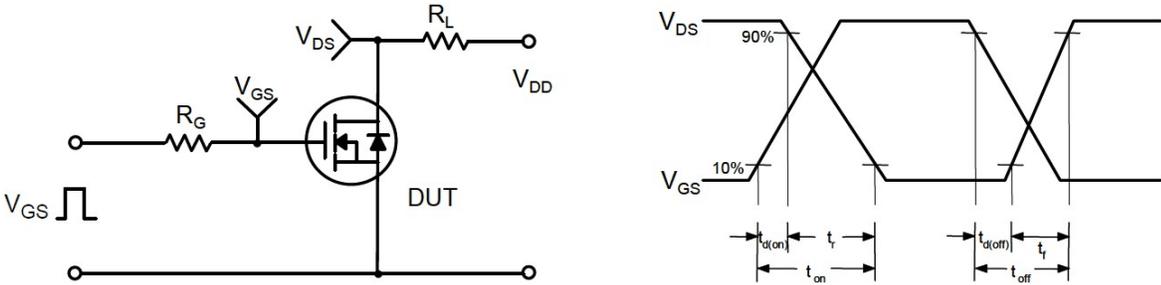


Figure 8. On-Resistance Variation vs Temperature

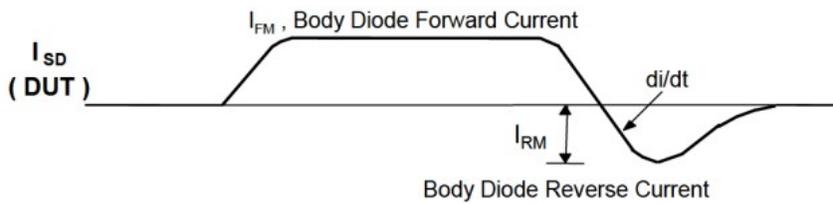
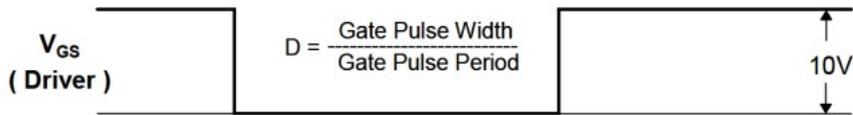
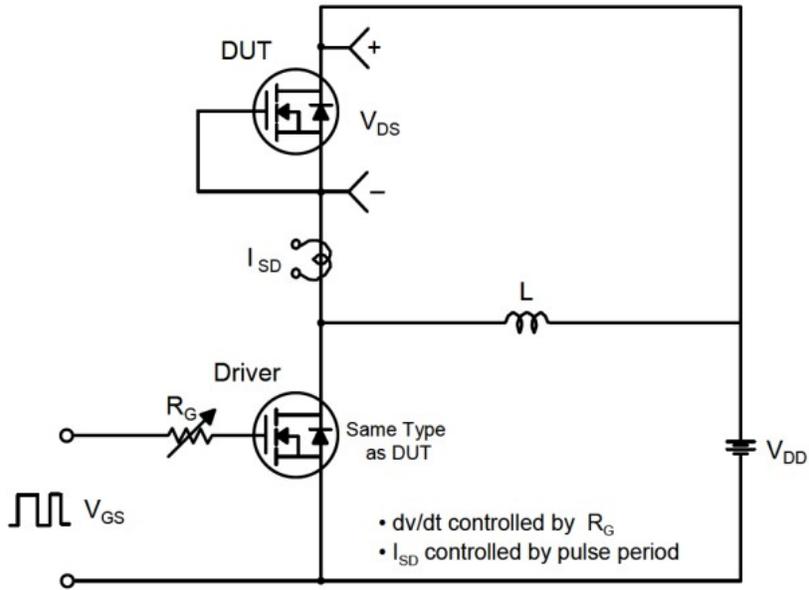
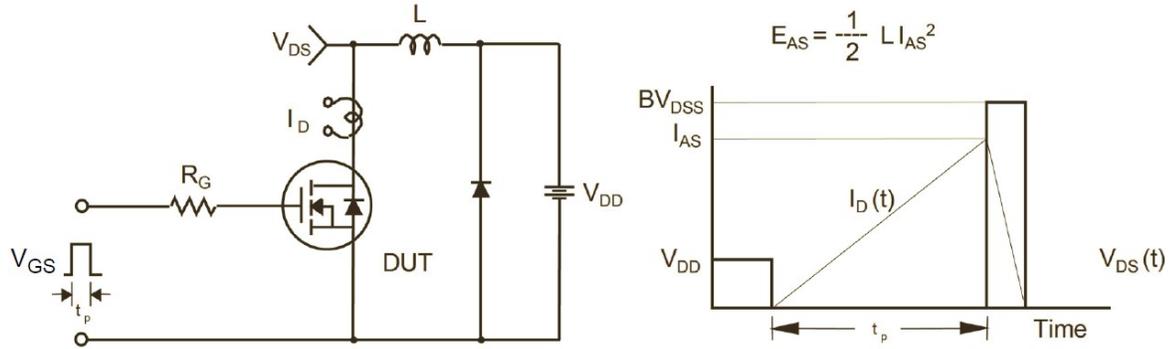
8 Test Circuit and Waveform



Gate Charge Test Circuit & Waveform

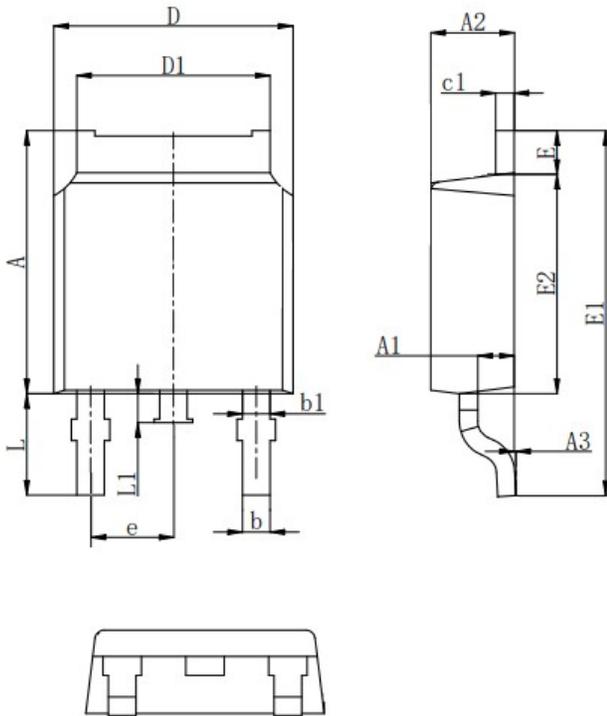


Resistive Switching Test Circuit & Waveforms



Peak Diode Recovery dv/dt Test Circuit & Waveforms

9 TO-252 Package Information



Dimension	A	A1	A2	A3	b	b1	c1	D	D1	E	E1	E2	e	L	L1
Min.	7.0	0.96	2.2	0	0.64		0.45	6.4	5.2	0.9	9.7	6.0		2.65	0.6
Typ.		1.01	2.3			1		6.6	5.35		10.0	6.1	2.286	2.8	0.8
Max.	7.45	1.06	2.4	0.12	0.88		0.58	6.7	5.5	1.25	10.3	6.2		2.95	1.0

10 Marking Distinguish

