



600V 5 Ω N-Channel Power MOSFET

CM02N60-T0252

Data Sheet

Version: V0.2

Features

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

List of Contents

Features 2

Applications 4

1 Description..... 4

2. Product Summary 4

3 TO252 Pin Description..... 4

4 Absolute Ratings ($T_A = 25^{\circ}\text{C}$ in a TO-252 package unless otherwise noted) 5

5 Thermal Characteristics 5

6 Electrical Characteristics 6

7 Typical Electrical Characteristics 7

8 Test Circuit and Waveform 9

9 TO-252 Package Information 11

10 Marking Distinguish 11

Applications

- Switching Mode Power Supply
- HID Lamp
- BLDC Motor

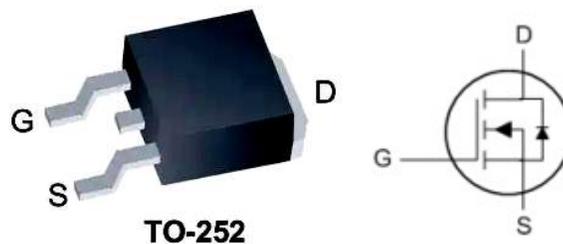
1 Description

The CM02N60-TO252 uses advanced MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality.

2. Product Summary

BVDSS	RDSON	ID
600V	5Ω	2A

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}	+600		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

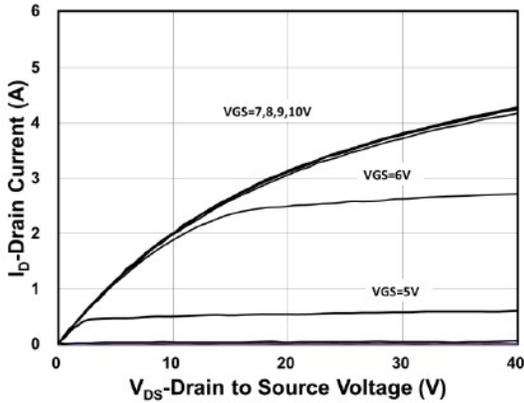
Parameter	Symbol	Value	Units
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$

6 Electrical Characteristics

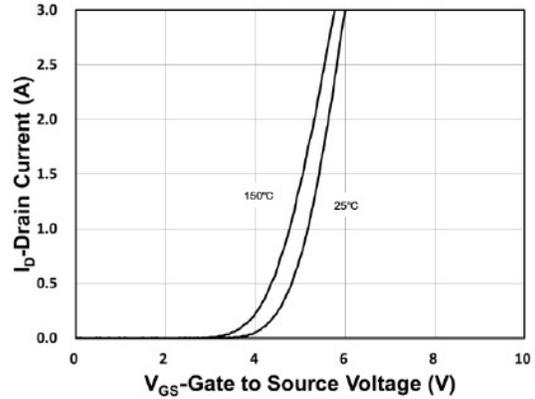
Static ($T_J=25^\circ\text{C}$ unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	600	---	---	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	---	---	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 600V, V_{GS} = 0V$	---	---	10	μA
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 1A$	---	4.2	5	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}	$V_{GS} = 0V, V_{DS} = 25V,$ $f = 1\text{MHz}$	---	249	---	pF
Output Capacitance	C_{oss}		---	30.7	---	
Reverse Transfer Capacitance	C_{rss}		---	5	---	
Total Gate Charge	Q_g	$V_{DS} = 480V, I_D = 2A,$ $V_{GS} = 10V$	---	9.4	---	nC
Gate-Source Charge	Q_{gs}		---	2.2	---	
Gate-Drain Charge	Q_{gd}		---	4.7	---	
Turn-on delay time	$T_{d(on)}$	$V_{DS} = 300V, I_D = 2A,$ $V_{GS} = 10V, R_G=25\Omega$	---	9.1	---	nS
Rise time	T_r		---	9.8	---	
Turn-off delay time	$T_{d(off)}$		---	17.4	---	
Fall time	T_f		---	12.4	---	
Reverse Diode Characteristics						
Continuous Source Current	I_S	$V_{GS} = 0V, V_{DS} \text{Open}, f=1\text{MHz}$	---	---	2	A
Diode Forward Voltage	V_{SD}	$I_S = 2A, V_{GS} = 0V$	---	---	1.4	V
Reverse Recovery Time	t_{rr}	$I_F=0.5A, I_R=1A, I_{RR}=0.25A$	---	55	---	ns
Reverse Recovery Charge	Q_{rr}		---	0.2	---	nC

7 Typical Electrical Characteristics

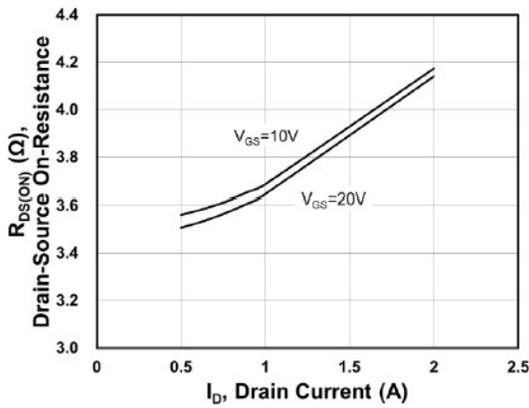
Output Characteristics



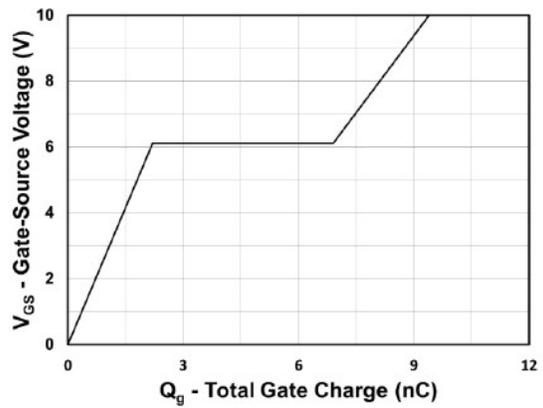
Transfer Characteristics



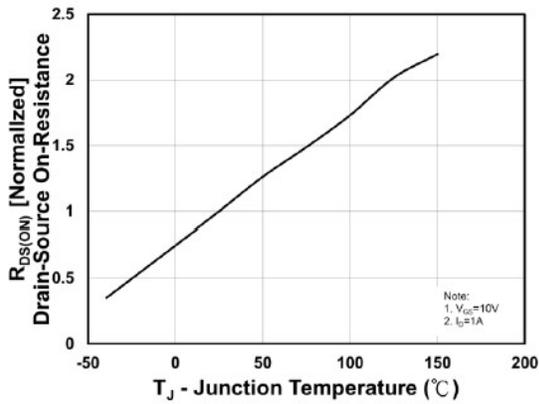
On-Resistance vs. Drain Current



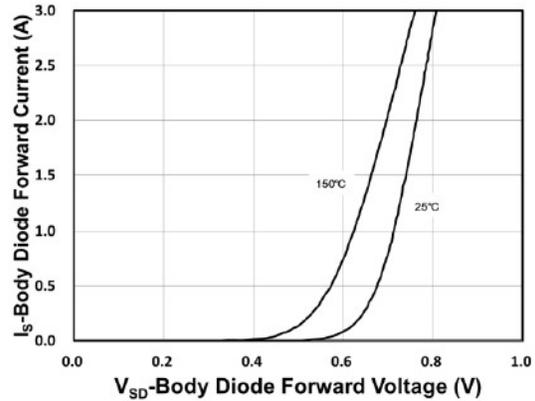
Gate-Source Voltage vs. Gate Charge



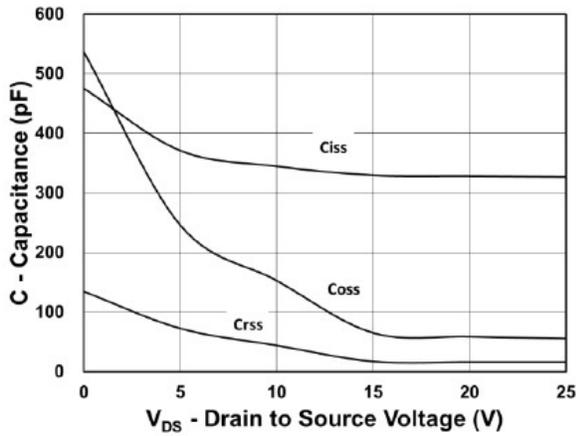
On-Resistance vs. Junction Temperature



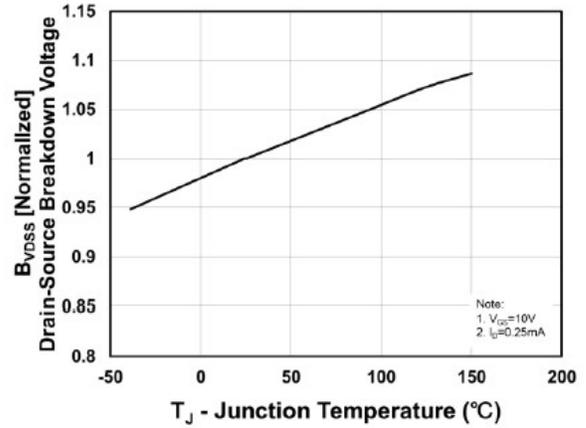
Source-Drain Diode Forward Current vs. Voltage



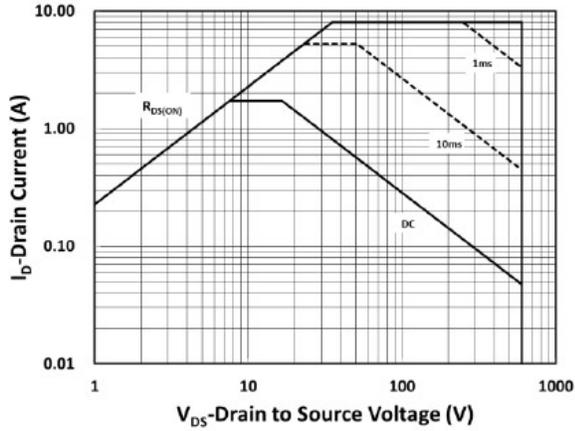
Capacitance vs. Drain-Source Voltage



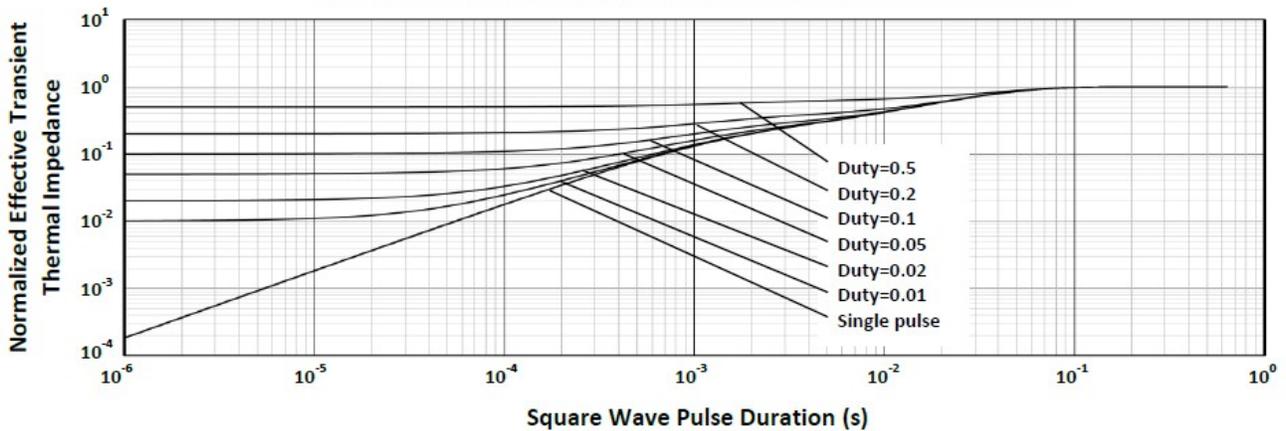
BV_{DSS} vs. Junction Temperature



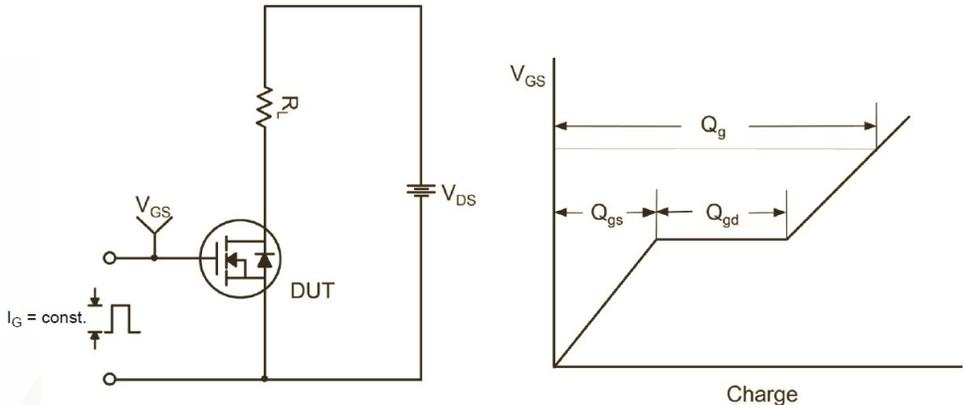
Maximum Safe Operating Area



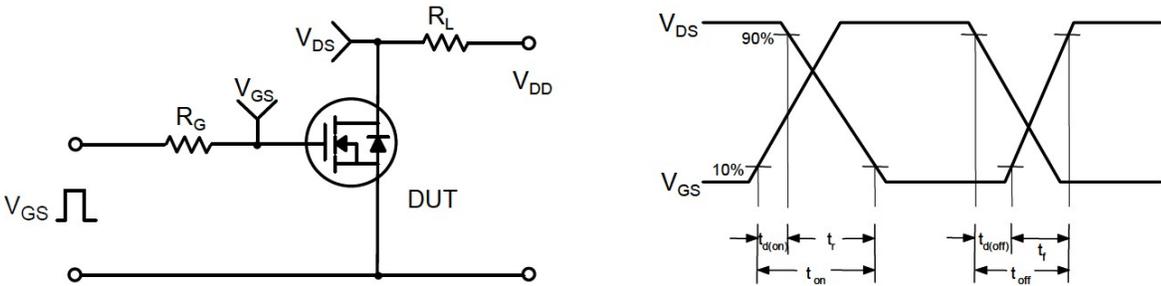
Normalized Thermal Transient Impedance, Junction-to-Case



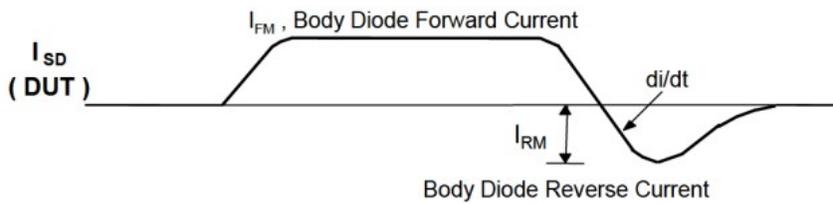
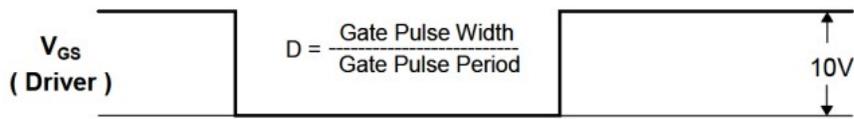
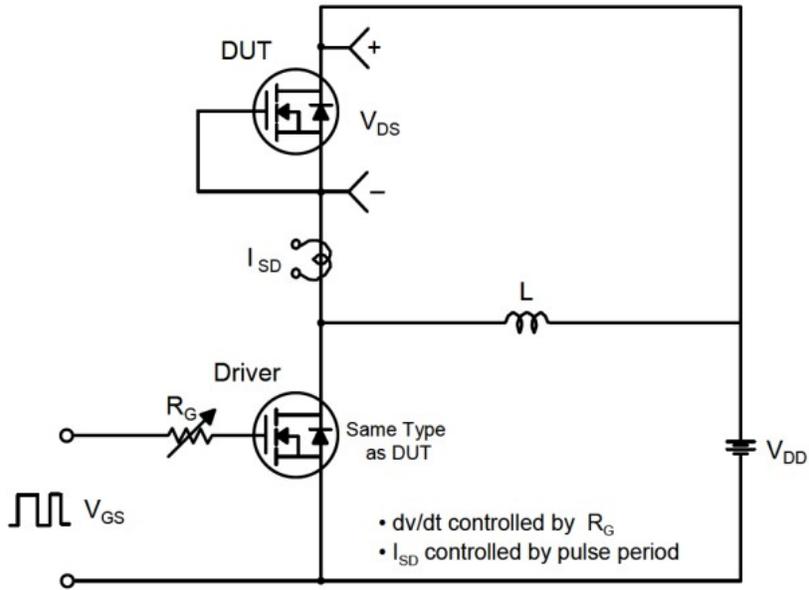
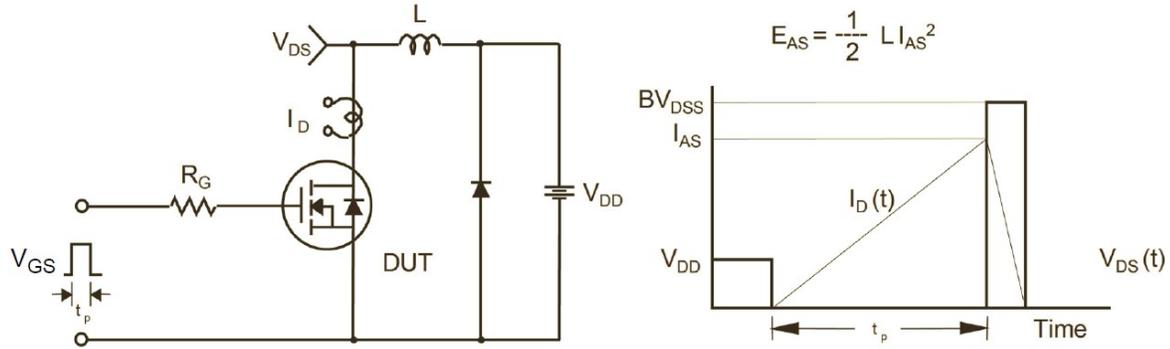
8 Test Circuit and Waveform



Gate Charge Test Circuit & Waveform

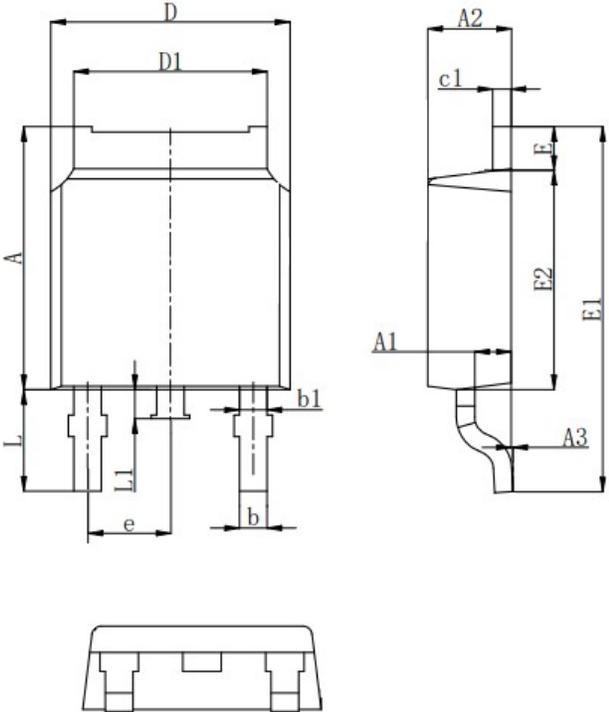


Resistive Switching Test Circuit & Waveforms



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

