CMT55N03G

25V N-CHANNEL ENHANCEMENT-MODE MOSFET

APPLICATION

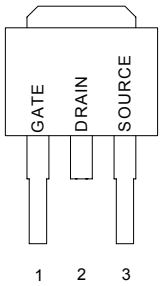
- Vds=25V
- $R_{DS(ON)}$=6 mΩ (Max.) , VGS @10V, Ids@30A
- $R_{DS(ON)}$=9 mΩ (Max.), VGS @4.5V, Ids@30A

FEATURES

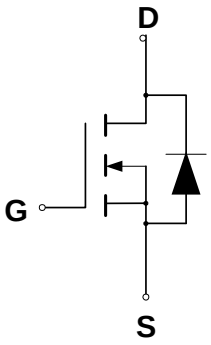
- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for DC/DC Converters and Motor Drivers
- Fully Characterized Avalanche Voltage and Current
- Improved Shoot-Through FOM

PIN CONFIGURATION

TO-252
Front View



SYMBOL



N-Channel MOSFET

Maximum Ratings and Thermal Characteristics

(TA=25℃ unless otherwise notes)

Rating		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	25	V
Gate -Source Voltage		V_{GS}	±20	V
Continuous Drain Current		I_D	55	A
Pulsed Drain Current[1)]		I_{DM}	100	A
Maximum Power Dissipation	T_A=25℃	P_D	70	W
	T_A=75℃	P_D	42	W
Operating Junction and Storage Temperature Range		T_J / T_{STG}	-55 to150	℃
Junction – to –Case Thermal Resistance		$R_{\theta JC}$	1.8	℃/W
Junction – to Ambient Thermal Resistance (PCB mount)[2)]		$R_{\theta JA}$	50	℃/W

Note : 1. Repetitive Rating : Pulse width limited by the Maximum junction temperation
2. 1-in^2 2oz Cu PCB board
3. Guaranteed by design ; not subject to production testing

ORDERING INFORMATION

Part Number	Package
CMT55N03GN252	TO-252

ELECTRICAL CHARACTERISTICS

(TA=25℃ unless otherwise notes)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Static						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	25	-	-	V
$R_{DS(ON)}$	Drain-Source On-State Resistancem	V_{GS}=4.5V, I_D=30A	-	7.5	9.0	mΩ
		V_{GS}=10V, I_D=30A	-	4.5	6.0	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	1.3	1.9	3	V
g_{fs}	Forward Transconductance	V_{DS}=15V, I_D=15A	-	-	-	S
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=25V, V_{GS}=0V	-	-	1	uA
I_{GSS}	Gate-Source Forward Leakage	V_{GS}=±20V , VDS=0V	-	-	±100	nA
Rg	Gate Resistance	VDS=0V , VGS=1V at 1MHz		3		Ω
Dynamic[3)]						
Q_g	Total Gate Charge	I_D=20A V_{DS}=15V V_{GS}=5V	-	16.8	-	nC
Q_{gs}	Gate-Source Charge		-	6.08	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge		-	4.93	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V I_D=1A R_G=6Ω R_L=15Ω V_{GEN}=10V	-	15.13	-	ns
t_r	Rise Time		-	4	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	45.27	-	ns
t_f	Fall Time		-	7.6	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V V_{DS}=15V f=1.0MHz	-	2325.9	-	pF
C_{oss}	Output Capacitance		-	330.55	-	pF
C_{rss}	Reverse Transfer Capacitance		-	173.91	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Diode Forward Voltage	I_S=20A, V_{GS}=0V	-	0.85	1.3	V
I_s	Max. Diode Forward Current		-	-	20	A

Notes:

Pulse test : Pulse width ≤300us , duty cycle ≤2%.

TYPICAL CHARACTERISTICS

Typical Characteristics Curves (Ta=25°C, unless otherwise noted)

Fig.1 Output Characteristic

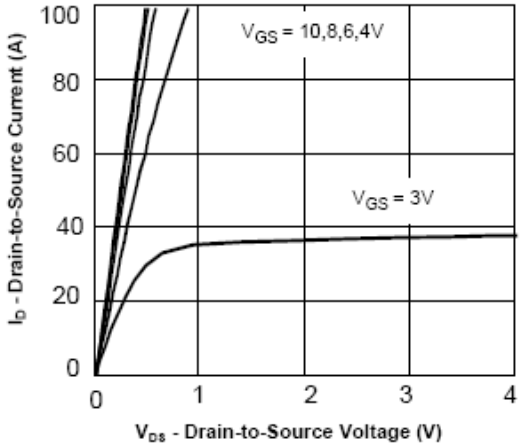


Fig.2 Transfer Characteristics

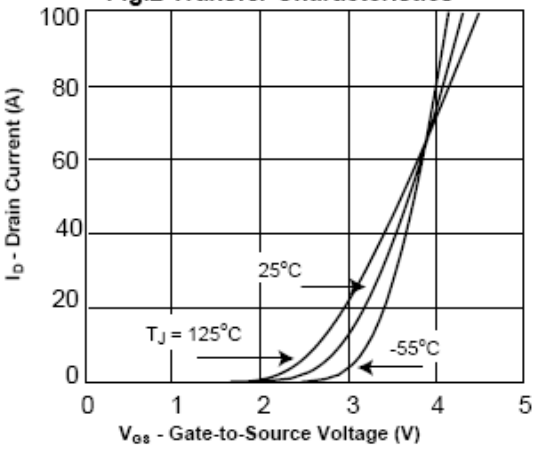


Fig.3 On-Resistance Variation with Temperature

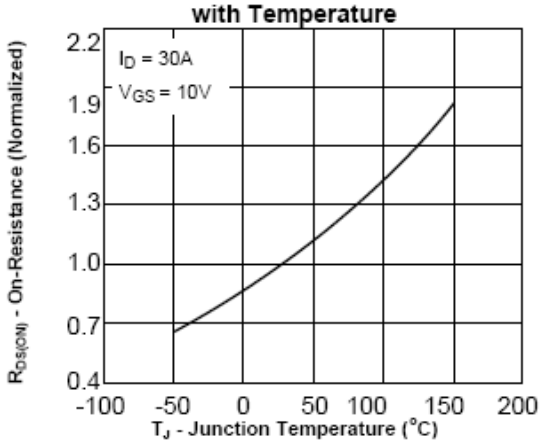


Fig.4 Body Diode Forward Voltage Variation with Source Current

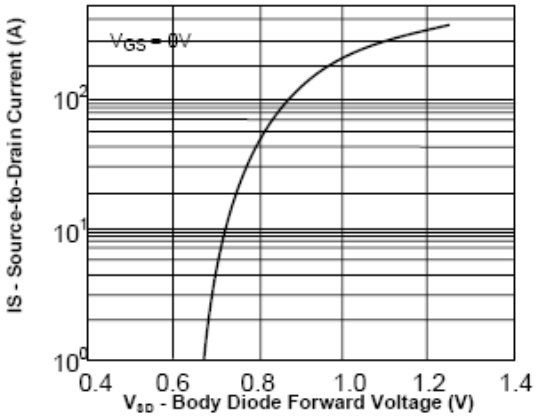


Fig.5 Gate Threshold Variation with Temperature

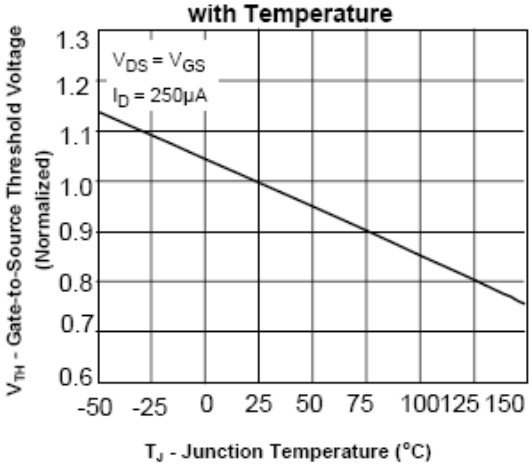
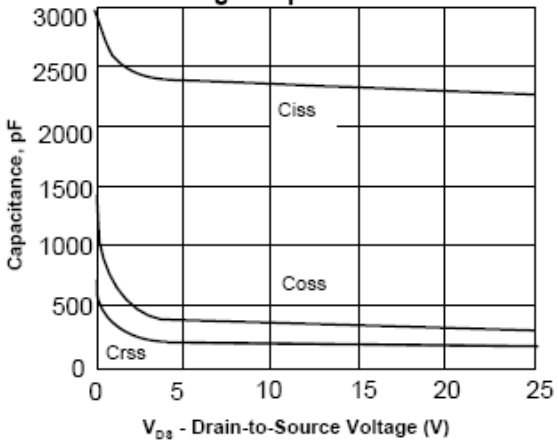


Fig.6 Capacitance



Typical Characteristics Curves (Ta=25°C, unless otherwise noted)

Fig. 7 Gate Charge Waveform

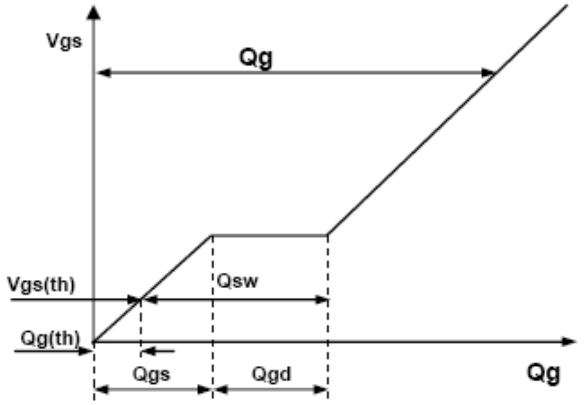


Fig. 8 Gate Charge

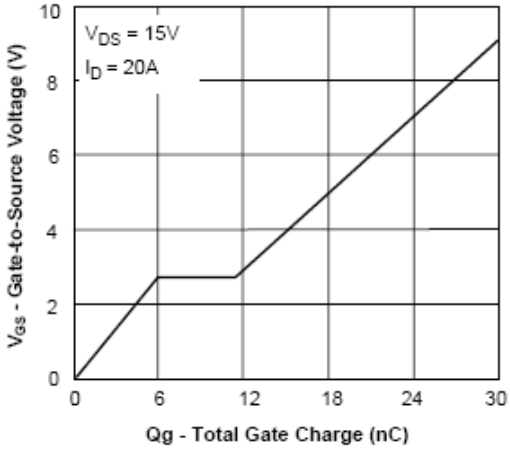


Fig. 9 Maximum Safe Operating Area

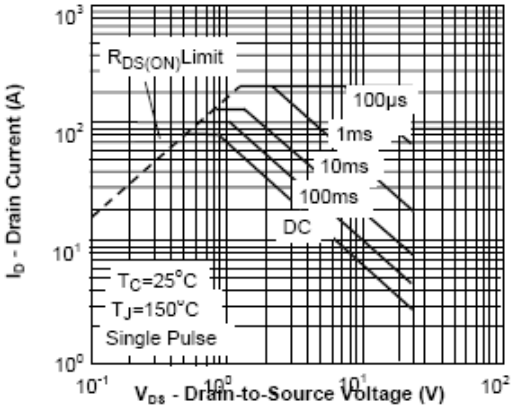
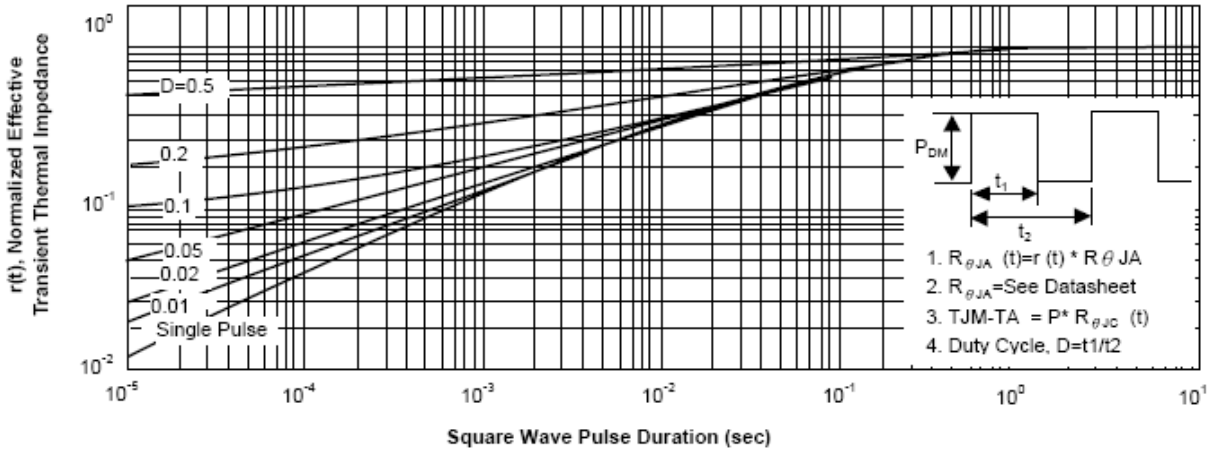
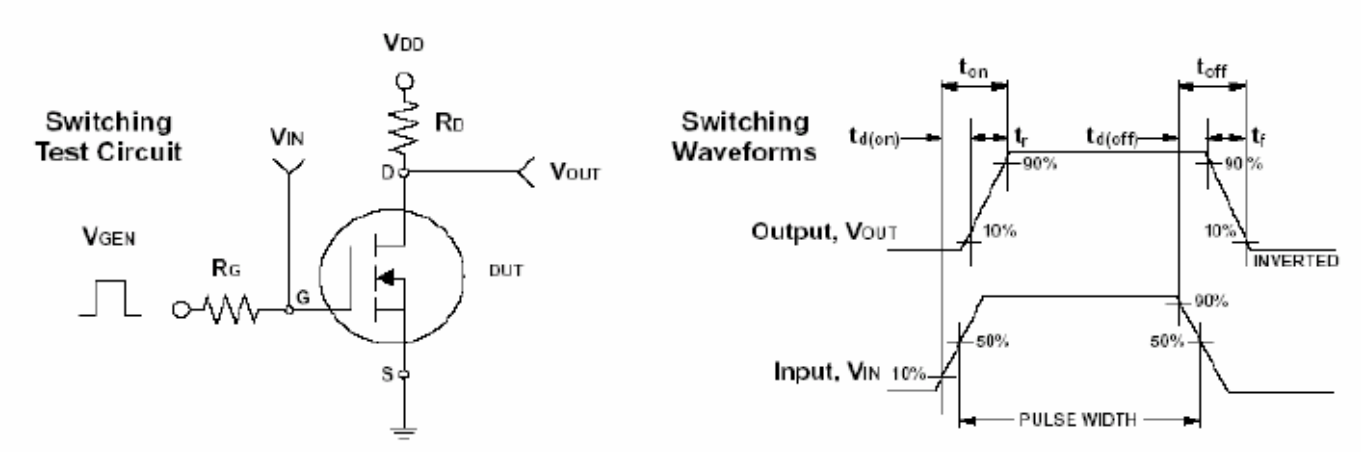


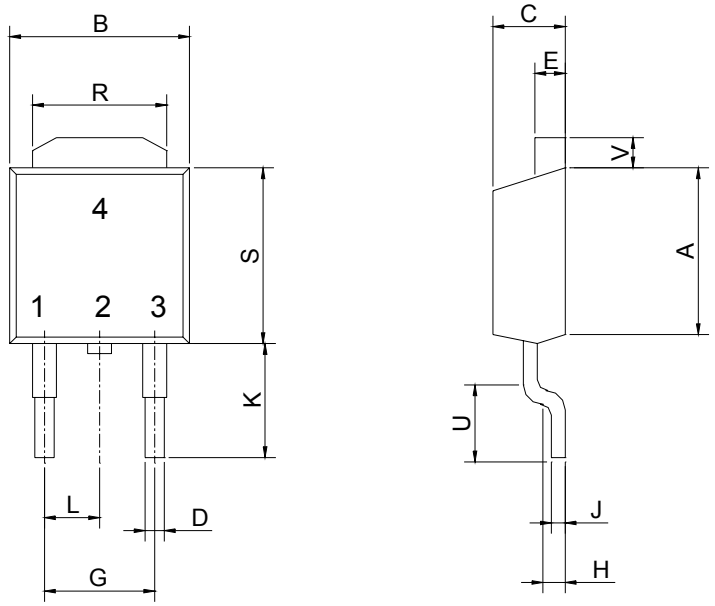
Fig. 10 Normalized Thermal Transient Impedance Curve





PACKAGE DIMENSION

TO-252



PIN 1: GATE
PIN 2: DRAIN
PIN 3: SOURCE

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	5.97	---	6.35	0.235	---	0.250
B	6.35	---	6.73	0.250	---	0.265
C	2.19	---	2.38	0.086	---	0.094
D	0.69	---	0.88	0.027	---	0.035
E	0.84	---	1.01	0.033	---	0.047
G	4.58BSC			0.180BSC		
H	0.87	---	1.01	0.034	---	0.040
J	0.46	---	0.58	0.018	---	0.023
K	2.60	---	2.89	0.102	---	0.114
L	2.29BSC			0.090BSC		
R	4.45	---	5.46	0.175	---	0.215
S	0.51	---	1.27	0.020	---	0.050
U	0.51	---	---	0.020	---	---
V	0.77	---	1.27	0.030	---	0.050

IMPORTANT NOTICE

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HsinChu Headquarter

5F-1, No. 11, Park Avenue II,
Science-Based Industrial Park,
HsinChu City, Taiwan
TEL: +886-3-567 9979
FAX: +886-3-567 9909

Sales & Marketing

7F-6, No.32, Sec. 1, Chenggong Rd., Nangang District, Taipei City 115, Taiwan
TEL: +886-2-2788 0558
FAX: +886-2-2788 2985