CMT70N03

N-CHANNEL Logic Level Power MOSFET

APPLICATION

- Buck Converter High Side Switch
- Other Applications

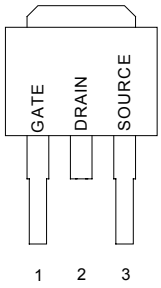
V_{DSS}	$R_{DS(ON)}$ Typ.	I_D
30V	6.6mΩ	71A

FEATURES

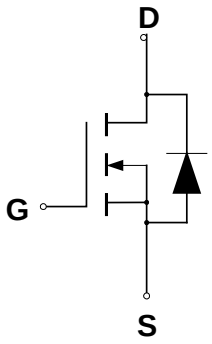
- Low ON Resistance
- Low Gate Charge
- Peak Current vs Pulse Width Curve
- Inductive Switching Curves
- Improved UIS Ruggedness

PIN CONFIGURATION

TO-252
Front View



SYMBOL



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain to Source Voltage (Note 1)	V_{DSS}	30	V
Drain to Current – Continuous Tc = 25℃, V_{GS}@10V (Note 2)	I_D	71	A
– Continuous Tc = 100℃, V_{GS}@10V (Note 2)	I_D	45	
– Pulsed Tc = 25℃, V_{GS}@10V (Note 3)	I_{DM}	284	
Gate-to-Source Voltage – Continue	V_{GS}	±20	V
Total Power Dissipation	P_D	66	W
Derating Factor above 25℃		0.53	W/℃
Peak Diode Recovery dv/dt (Note 4)	dv/dt	3.0	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	TBD	mJ
Maximum Lead Temperature for Soldering Purposes	T_L	300	℃
Maximum Package Body for 10 seconds	T_{PKG}	260	℃

THERMAL RESISTANCE

Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
$R_{\theta JC}$	Junction-to-case			1.9	℃/W	Water cooled heatsink, P_D adjusted for a peak junction temperature of +150℃
$R_{\theta JA}$	Junction-to-ambient (PCB Mount)			50	℃/W	Minimum pad area, 2-oz copper, FR-4 circuit board, double sided
$R_{\theta JA}$	Junction-to-ambient			62	℃/W	1 cubic foot chamber, free air

ORDERING INFORMATION

Part Number	Package
CMT70N03	TO-252

ELECTRICAL CHARACTERISTICS

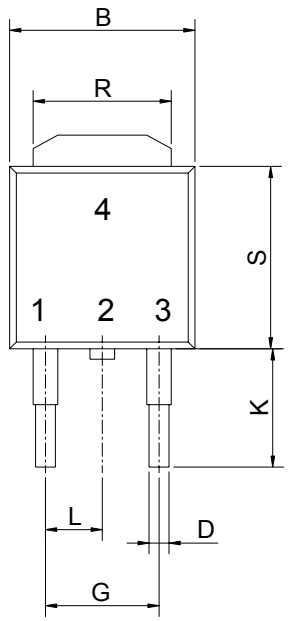
Unless otherwise specified, T_J = 25℃.

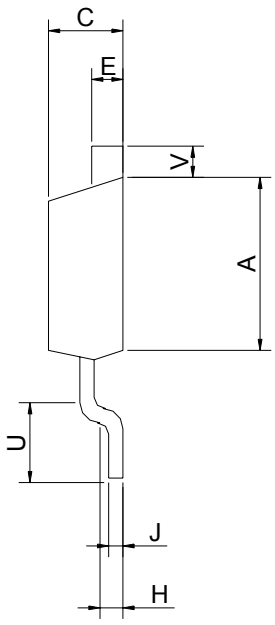
			CMT70N03			
Characteristic		**Symbol**	**Min**	**Typ**	**Max**	**Units**
OFF Characteristics						
Drain-to-Source Breakdown Voltage (V_{GS} = 0 V, I_D = 250 μA)		V_{DSS}	30			V
Breakdown Voltage Temperature Coefficient, (Reference to 25℃, I_D = 1mA)		$\Delta V_{DSS}/\Delta T_J$		0.05		V/℃
Drain-to-Source Leakage Current (V_{DS} = 30 V, V_{GS} = 0 V, T_J = 25℃) (V_{DS} = 24 V, V_{GS} = 0 V, T_J = 125℃)		I_{DSS}			1 10	μA
Gate-to-Source Forward Leakage (V_{GS} = 20 V)		I_{GSS}			100	nA
Gate-to-Source Reverse Leakage (V_{GS} = -20 V)		I_{GSS}			-100	nA
ON Characteristics						
Gate Threshold Voltage, (V_{DS} = V_{GS}, I_D = 250 μA)		$V_{GS(th)}$	1.0		3.0	V
Static Drain-to-Source On-Resistance, (Note 5) (V_{GS} = 10 V, I_D = 15A) (V_{GS} = 4.5 V, I_D = 12A)		$R_{DS(on)}$		6.6 12	8.0	mΩ
Forward Transconductance (V_{DS} = 20V, I_D = 12A) (Note 5)		g_{FS}		30		S
Dynamic Characteristics						
Input Capacitance	(V_{DS} = 15 V, V_{GS} = 0 V, f = 1.0 MHz)	C_{iss}		2600		pF
Output Capacitance		C_{oss}		480		pF
Reverse Transfer Capacitance		C_{rss}		230		pF
Total Gate Charge (V_{GS} = 10 V)	(V_{DS} = 15 V, I_D = 12 A) (Note5, 6)	Q_g		50		nC
Total Gate Charge (V_{GS} = 4.5 V)		Q_g		25		nC
Gate-to-Source Charge		Q_{gs}		7.5		nC
Gate-to-Drain Charge		Q_{gd}		8.5		nC
Resistive Switching Characteristics						
Turn-On Delay Time	(V_{DD} = 15 V, I_D = 15 A, V_{GS} = 10 V, R_G = TBDΩ) (Note 5,6)	$t_{d(on)}$		TBD		ns
Rise Time		t_r		TBD		ns
Turn-Off Delay Time		$t_{d(off)}$		TBD		ns
Fall Time		t_f		TBD		ns
Source-Drain Diode Characteristics						
Continuous Source Current (Body Diode)	Integral pn-diode in MOSFET(Note 2)	I_S			71	A
Pulse Source Current (Body Diode)		I_{SM}			284	A
Forward On-Voltage	(I_S = 12 A, V_{GS} = 0 V)	V_{SD}			1.0	V
Forward Turn-On Time	(I_F = 12 A, V_{GS} = 0 V,	t_{rr}		30		ns
Reverse Recovery Charge	d_i/d_t = 100A/μs) (Note 5)	Q_{rr}		40		nC

Note 1: T_J = +25℃ to 150℃
Note 2: Current is calculated based upon maximum allowable junction temperature.
Package current limitation is 30A.
Note 3: Repetitive rating; pulse width limited by maximum junction temperature.
Note 4: I_{SD} = 12.0A, di/dt ≤200A/μs, V_{DD} ≤BV_{DSS}, T_J = +150℃
Note 5: Pulse width ≤ 250μs; duty cycle ≤ 2%
Note 6: Essentially independent of operating temerpature.

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

11F, No. 306-3, SEC. 1, Ta Tung Road,
Hsichih, Taipei Hsien 221, Taiwan

TEL: +886-2-8692 1591
FAX: +886-2-8692 1596