ME100N03T /ME100N03T-G

N- Channel 30V (D-S) MOSFET

GENERAL DESCRIPTION

The ME100N03T-G is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance.

FEATURES

- $R_{DS(ON)} \leqq 3m\Omega @ V_{GS}=10V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

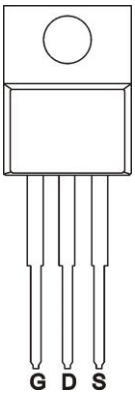
APPLICATIONS

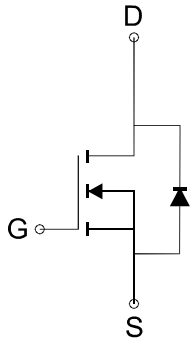
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(TO-220)

Top View





N-Channel MOSFET

Ordering Information: ME100N03T /ME100N03T-G (Green product-Halogen free)

Absolute Maximum Ratings (Tc=25℃ Unless Otherwise Noted)

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current*	Tc=25℃	I_D	172	A
	Tc=70℃		144	
Pulsed Drain Current		I_{DM}	690	A
Maximum Power Dissipation*	Tc=25℃	P_D	178	W
	Tc=70℃		125	
Operating Junction and Storage Temperature Range		TJ, Tstg	-55 to 175	℃
Thermal Resistance-Junction to Case*		$R_{\theta JC}$	0.84	℃/W

*The device mounted on 1in^2 FR4 board with 2 oz copper

* Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 80A.

N- Channel 30V (D-S) MOSFET

Electrical Characteristics (T_C =25℃ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1		2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-State Resistance[a]	V_{GS}=10V, I_D= 30A		2.4	3	mΩ
V_{SD}	Diode Forward Voltage	I_S=30A, V_{GS}=0V			1.2	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_D=15A		135		nC
Qgs	Gate-Source Charge			28.5		
Qgd	Gate-Drain Charge			31.2		
Ciss	Input capacitance	V_{DS}=15V, V_{GS}=0V, F=1MHz		6292		pF
Coss	Output Capacitance			831		
Crss	Reverse Transfer Capacitance			711		
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=15V, R_L =15Ω V_{GEN}=10V, R_G=3.3Ω		32.8		ns
t_r	Turn-On Rise Time			19.7		
$t_{d(off)}$	Turn-Off Delay Time			108		
t_f	Turn-Off Fall Time			26.7		

Notes: a. Pulse test: pulse width≦ 300us, duty cycle≦ 2%, Guaranteed by design, not subject to production testing.

b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.

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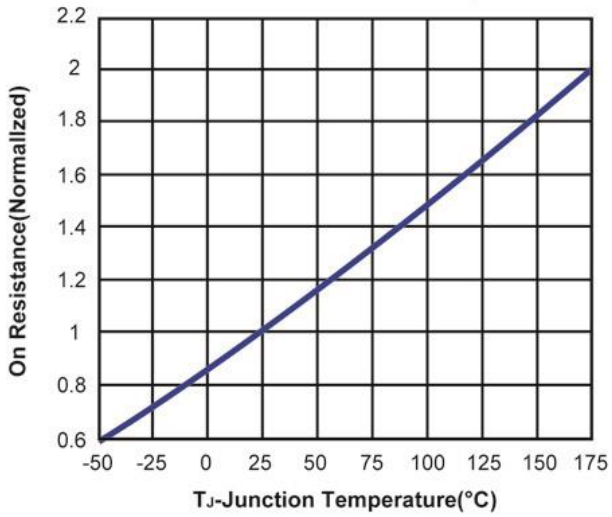
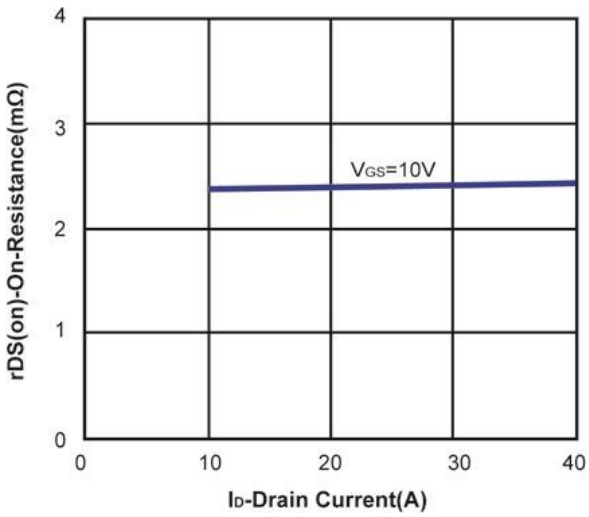
Typical Characteristics (T_J =25℃ Noted)

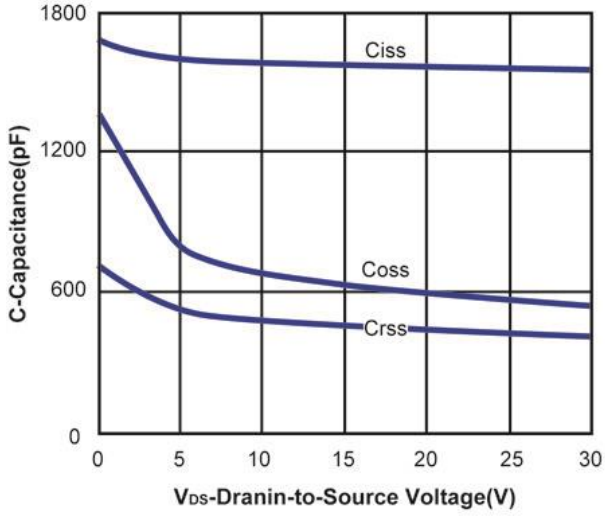
On Resistance vs. Junction Temperature



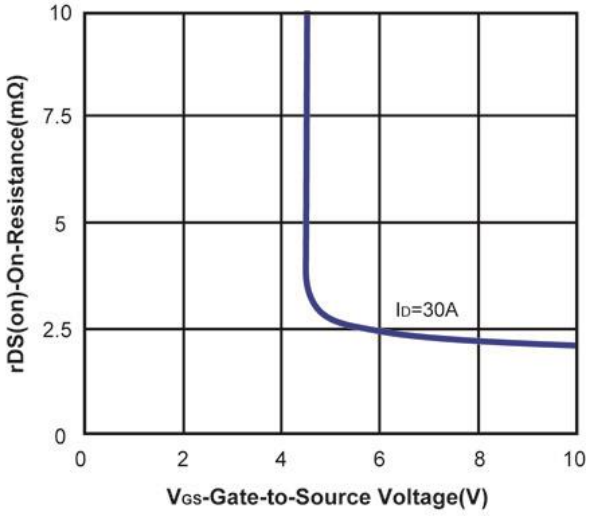
On Resistance vs. Drain Current



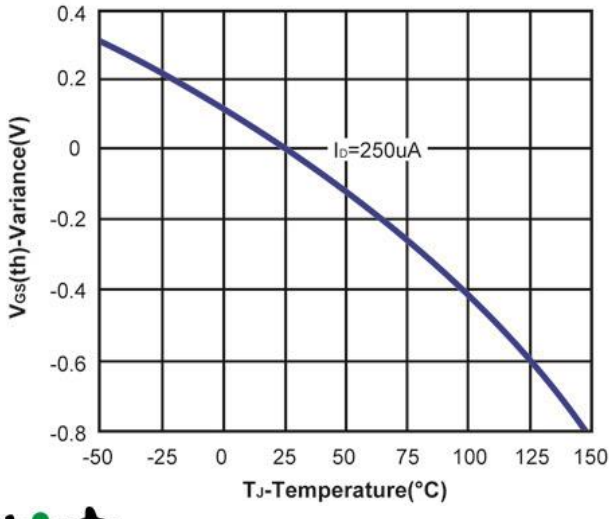
Capacitance



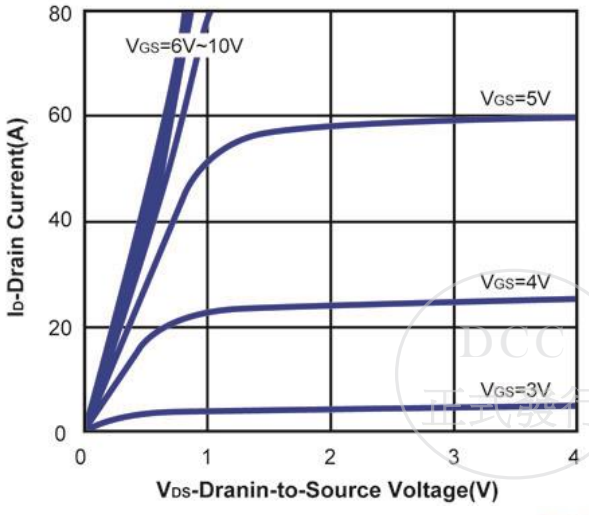
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



On-Region Characteristics



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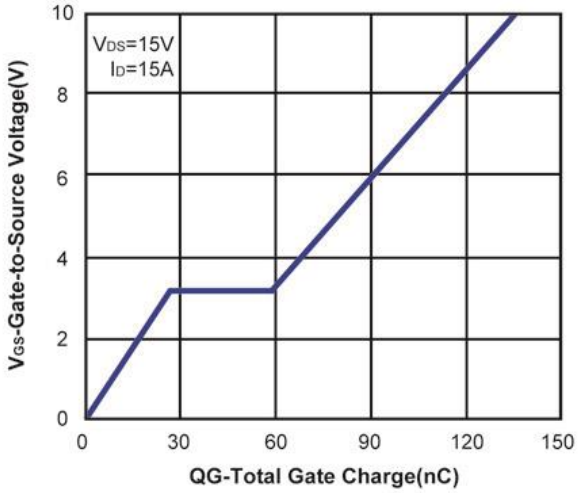
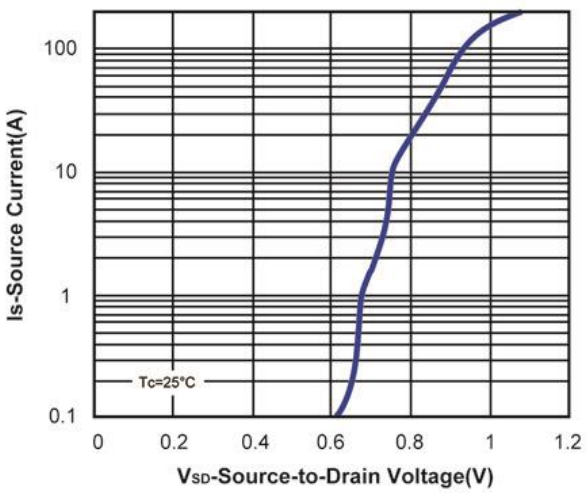
Typical Characteristics (T_J =25℃ Noted)

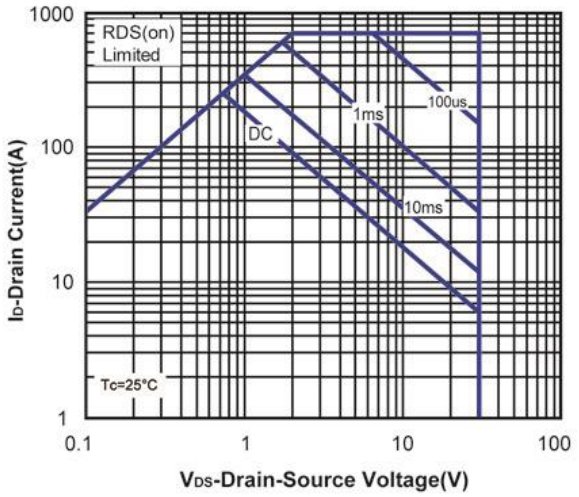
Gate Charge



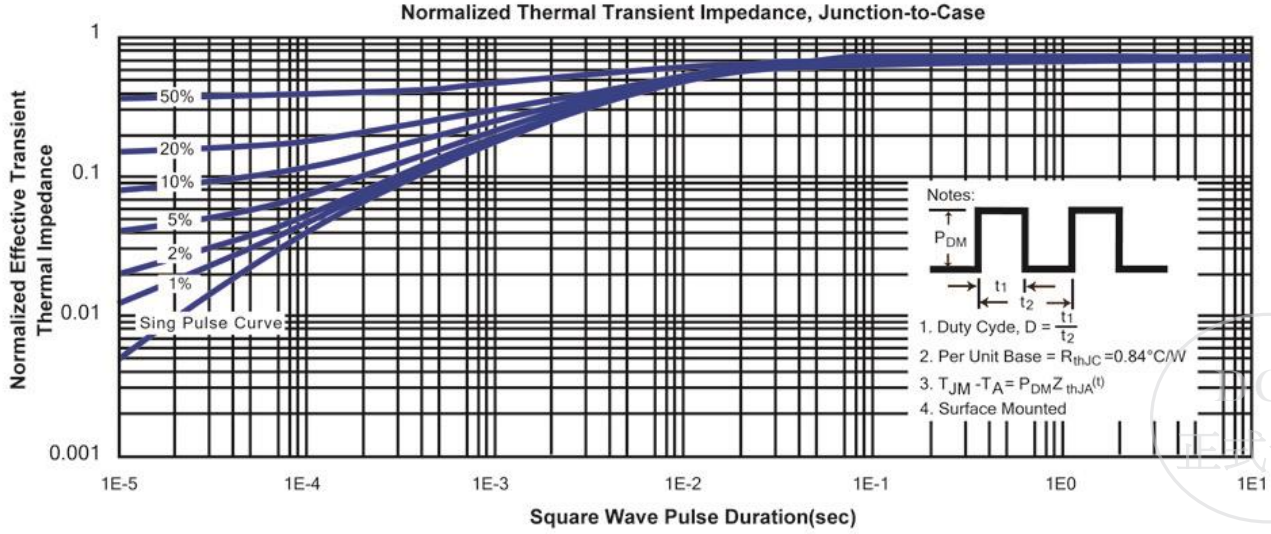
Body-diode characteristics



Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case



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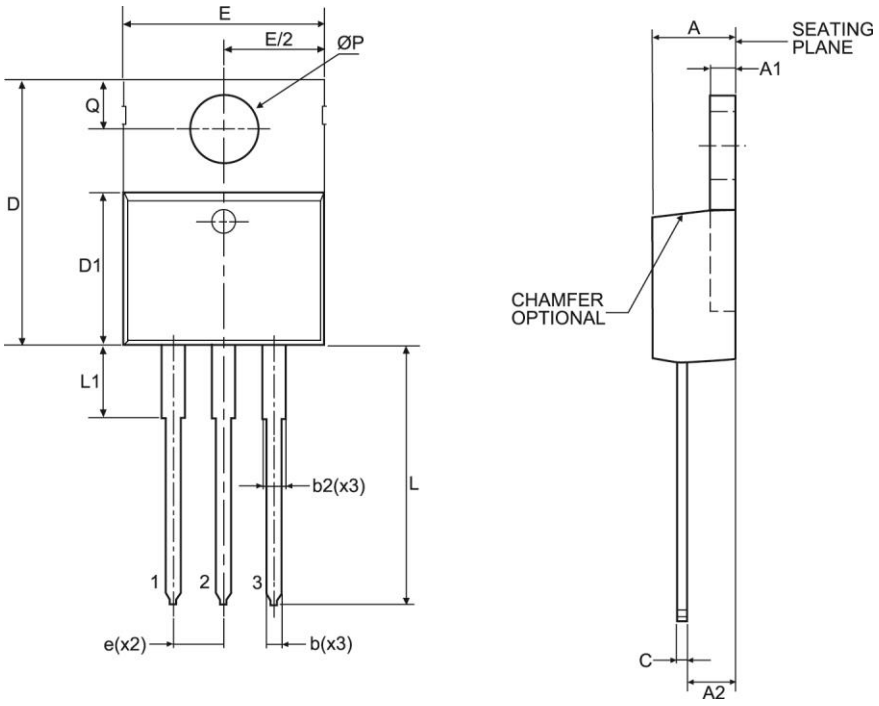
TO220 Package Outline



Symbol	MILLIMETERS (mm)	
	MIN	MAX
A	3.50	4.90
A1	1.00	1.40
A2	2.00	3.00
b	0.70	1.40
c	0.35	0.65
D	14.00	16.50
D1	8.30	9.50
E	9.60	10.70
e	2.54 BSC	
L	12.50	15.00
ØP	3.60 TYP	
Q	2.50	3.10
b2	1.10	1.80
L1	2.40	3.20