ME45N03T/ME45N03T-G

30V N-Channel Enhancement Mode

GENERAL DESCRIPTION

The ME45N03T 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

- $R_{DS(ON)} \leqq 14m\Omega$@VGS=10V
- $R_{DS(ON)} \leqq 21m\Omega$@VGS=4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

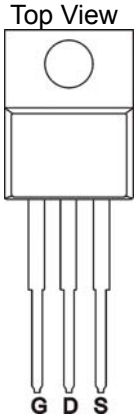
APPLICATIONS

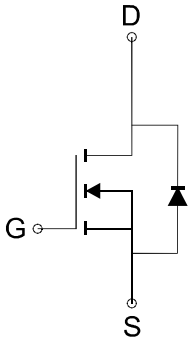
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(TO-220)

Top View





N-Channel MOSFET

Ordering Information: ME45N03T (Pb-free)

ME45N03T-G (Green product-Halogen free)

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_j=150℃)	T_C=25℃	I_D	58	A
	T_C=70℃		48	
Pulsed Drain Current		I_{DM}	232	A
Maximum Power Dissipation	T_C=25℃	P_D	75	W
	T_C=70℃		53	
Operating Junction Temperature		T_J	-55 to 175	℃
Thermal Resistance-Junction to Case *		$R_{\theta JC}$	2	℃/W

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

30V N-Channel Enhancement Mode

Electrical Characteristics (T_A=25℃ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{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		3	V
I_{GSS}	Gate-Body Leakage	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance*	V_{GS}=10V, I_D=20A		11.5	14	mΩ
		V_{GS}=4.5V, I_D=20A		15	21	
V_{SD}	Diode Forward Voltage *	I_{SD}=20A, V_{GS}=0V		0.9	1.2	V
DYNAMIC						
Qg	Total Gate Charge	V_{DD}=24V, V_{GS}=10V, I_D=20A		20		nC
Qg	Total Gate Charge	V_{DD}=24V, V_{GS}=5V, I_D=20A		11.4		
Qgs	Gate-Source Charge			4.5		
Qgd	Gate-Drain Charge			5.3		
Rg	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		1.7		Ω
Ciss	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz		832		pF
Coss	Output Capacitance			133		
Crss	Reverse Transfer Capacitance			41		
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V, I_D=10A, V_{GS} =5V, R_G=4.7Ω		22		ns
t_r	Turn-On Rise Time			31		
$t_{d(off)}$	Turn-Off Delay Time			29		
t_f	Turn-Off Fall Time			7		

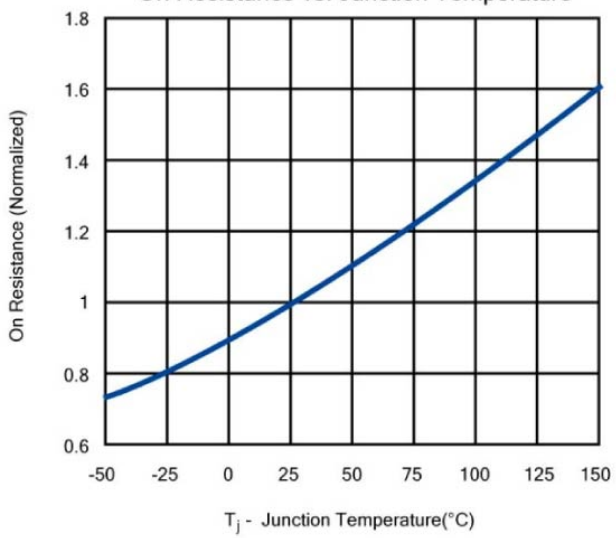
Notes: a. pulse test: pulse width≦ 300us, duty cycle≦ 2%,Guaranteed by design, not subject to production testing.

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

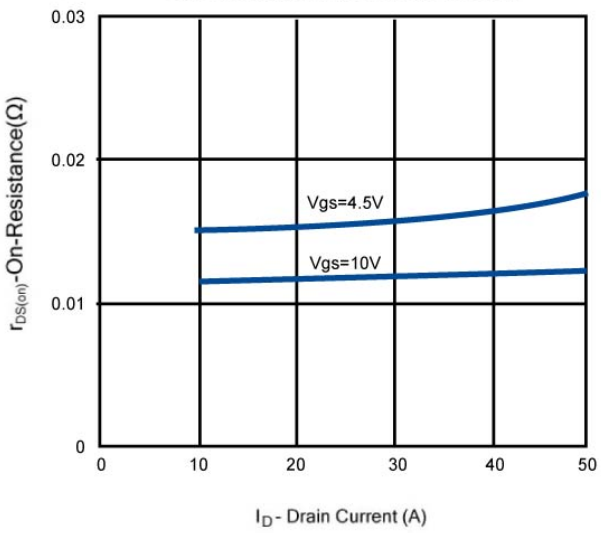
30V N-Channel Enhancement Mode

Typical Characteristics (T_J =25℃ Noted)

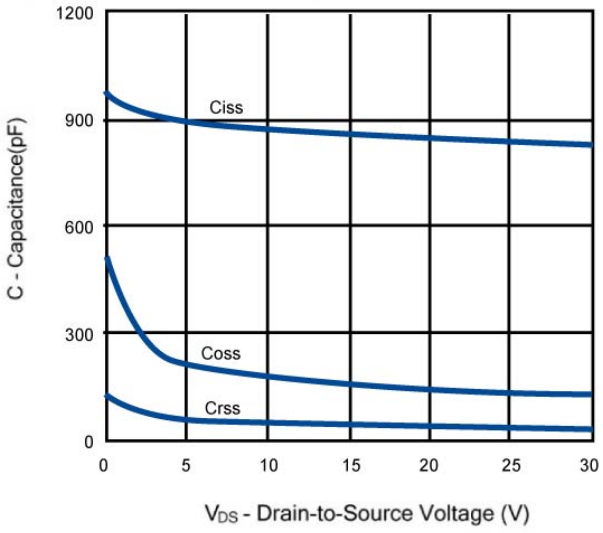
On Resistance vs. Junction Temperature



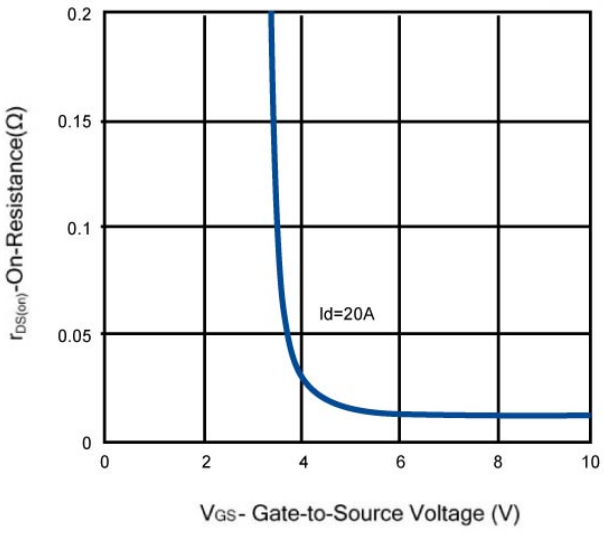
On-Resistance vs. Drain Current



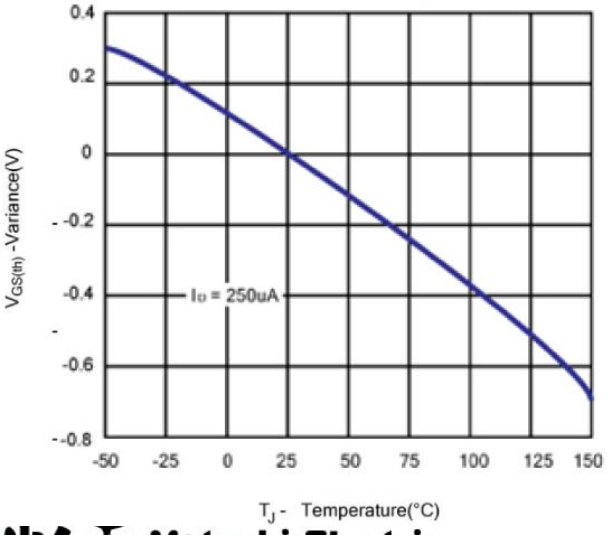
Capacitance



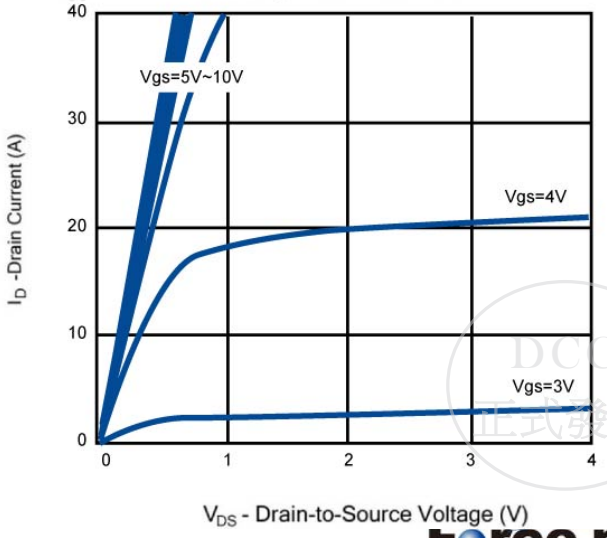
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



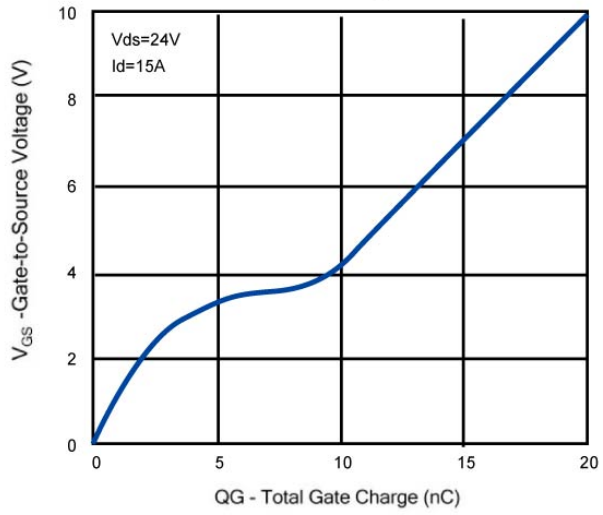
On-Region Characteristics



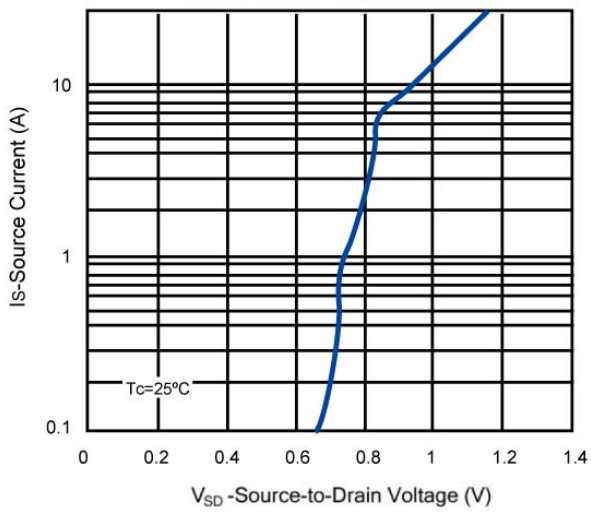
30V N-Channel Enhancement Mode

Typical Characteristics (T_J =25℃ Noted)

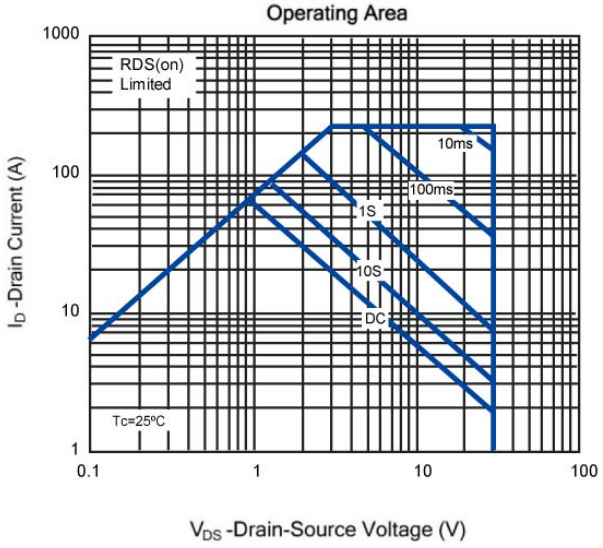
Gate Charge



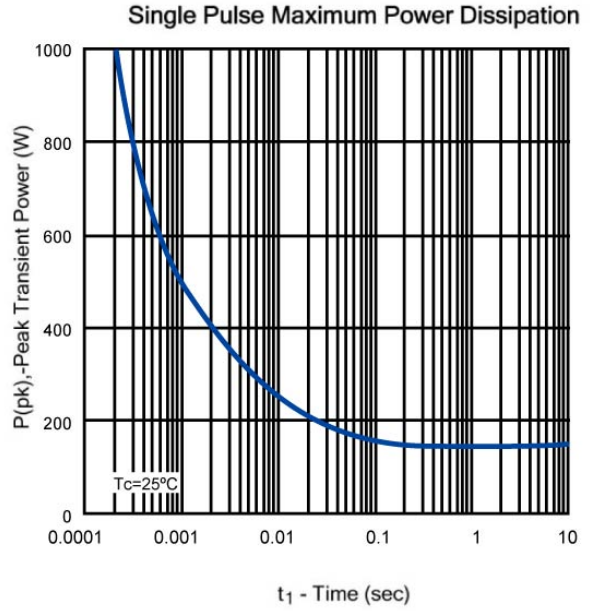
Body-diode characteristics



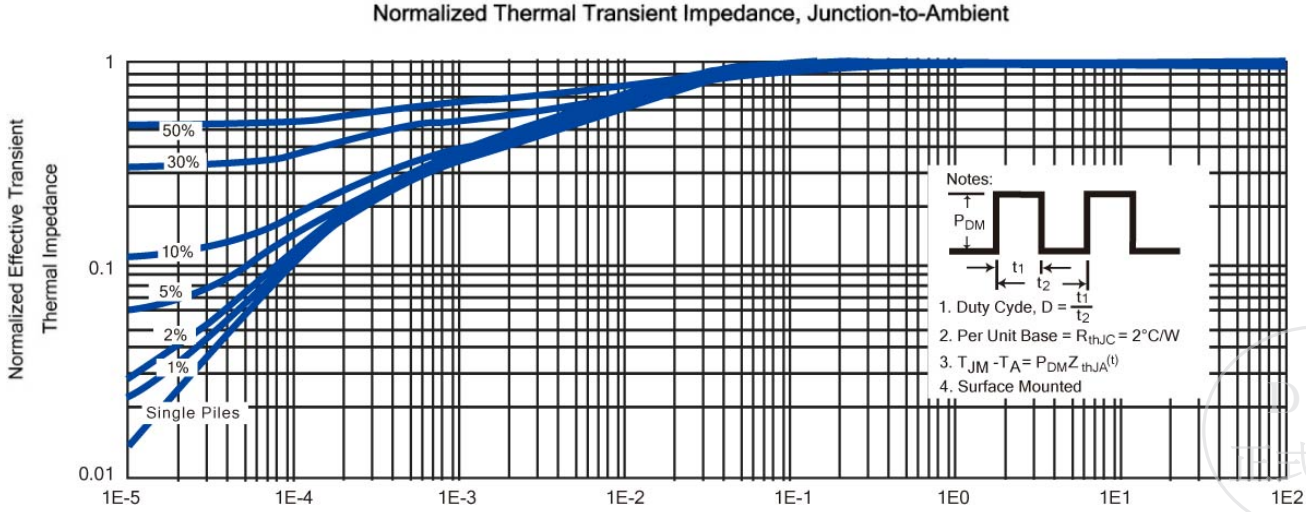
Maximum Forward Biased Safe Operating Area



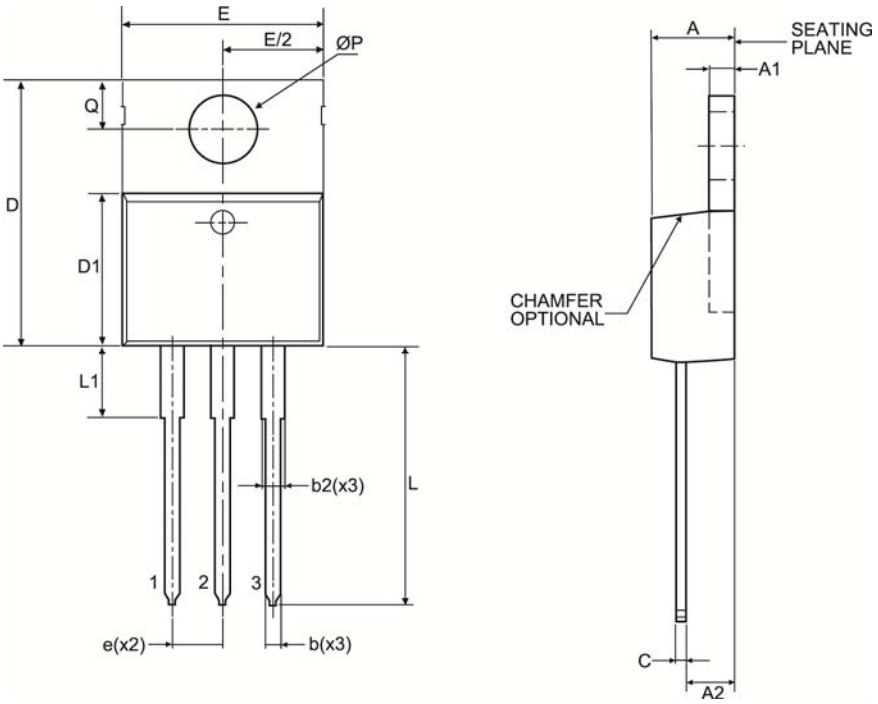
Single Pulse Maximum Power Dissipation



Normalized Thermal Transient Impedance, Junction-to-Ambient



TO-220 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