ME2604/ME2604-G

N - Channel 250-V (D-S) MOSFET

GENERAL DESCRIPTION

The ME2604 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

- $R_{DS(ON)} \leqq 1.7\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leqq 1.9\Omega @ V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

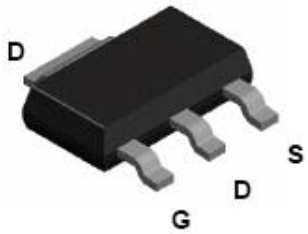
APPLICATIONS

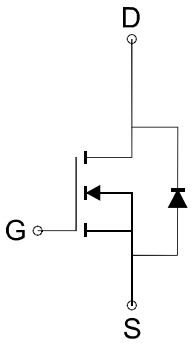
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(SOT-223)

Top View





N-Channel MOSFET

Ordering Information: ME2604(Pb-free)

ME2604-G (Green product-Halogen free)

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	250	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current	T_A=25℃	I_D	0.9	A
	T_A=70℃		0.7	
Pulsed Drain Current		I_{DM}	3.6	A
Maximum Power Dissipation	T_A=25℃	P_D	2.2	W
	T_A=70℃		1.4	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	℃
Thermal Resistance-Junction to Ambient*		$R_{\theta JA}$	57	℃/W

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

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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	250			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.5		3.5	V
I_{GSS}	Gate-Body Leakage	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=250V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance*	V_{GS}=10V, I_D=1A		1.4	1.7	Ω
		V_{GS}=4.5V, I_D=1A		1.45	1.9	
V_{SD}	Diode Forward Voltage *	I_{SD}=1A, V_{GS}=0V		0.8	1.2	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=200V, V_{GS}=10V, I_D=1.5A		30		nC
Qg	Total Gate Charge	V_{DS}=200V, V_{GS}=4.5V, I_D=1.5A		17		
Qgs	Gate-Source Charge			3		
Qgd	Gate-Drain Charge			12		
Ciss	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		1170		pF
Coss	Output Capacitance			36		
Crss	Reverse Transfer Capacitance			10		
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=125V, R_L =125Ω R_G=6Ω, V_{GEN}=10V		19		ns
tr	Turn-On Rise Time			4		
$t_{d(off)}$	Turn-Off Delay Time			48		
t_f	Turn-Off Fall Time			13		

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

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

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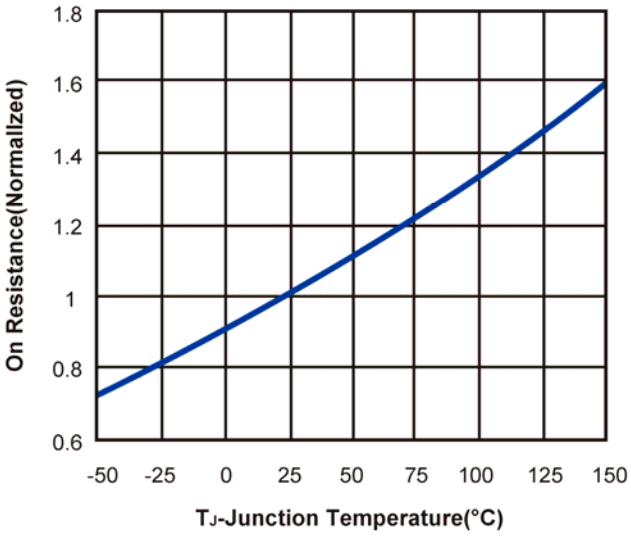
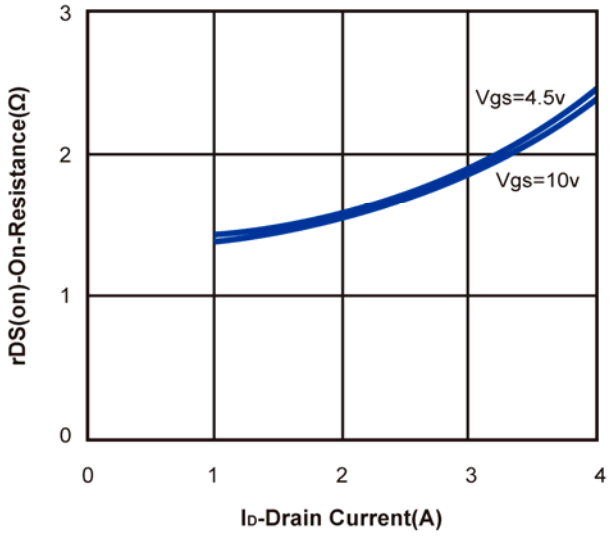
Typical Characteristics (TJ =25℃ Noted)

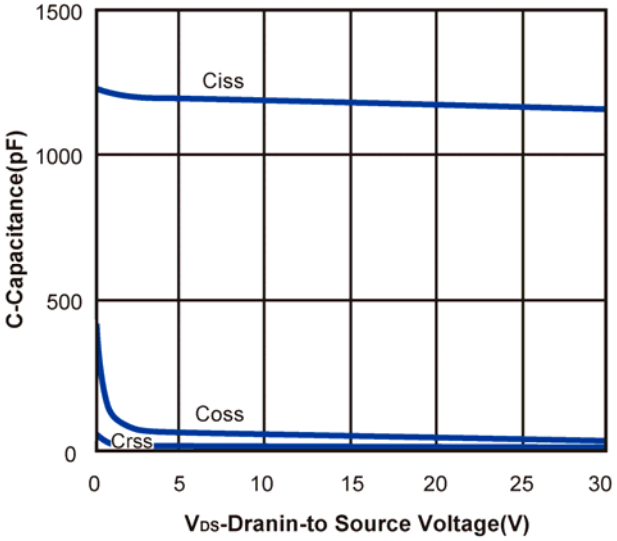
On Resistance vs. Junction Temperature



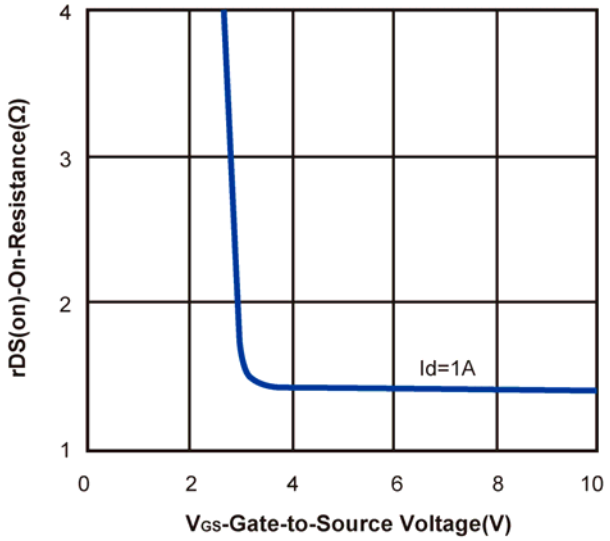
On Resistance vs. Drain Current



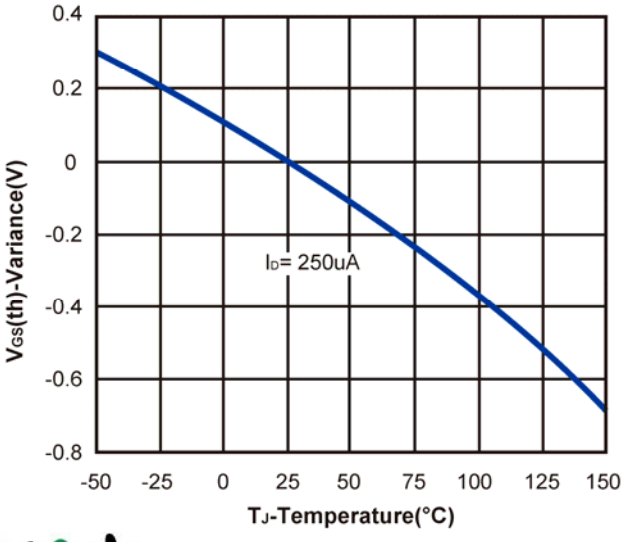
Capacitance



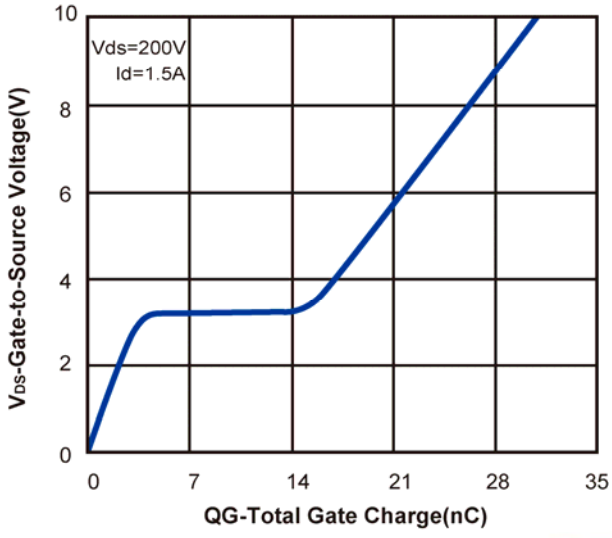
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Gate Charge



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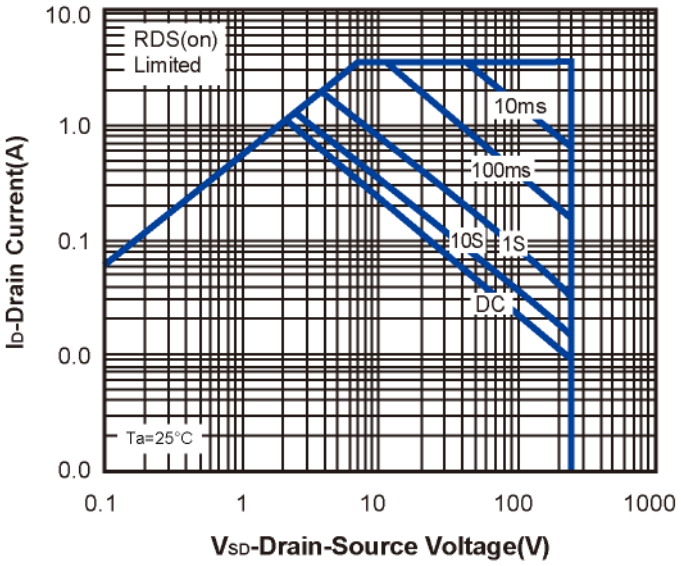
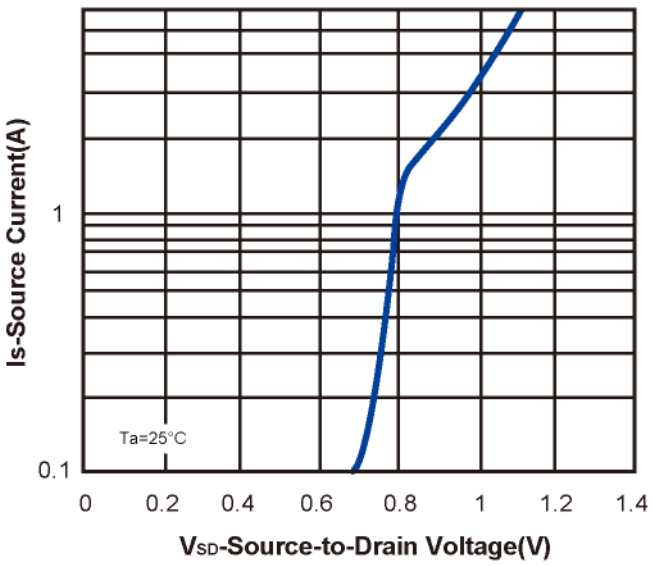
Typical Characteristics (T_J =25℃ Noted)

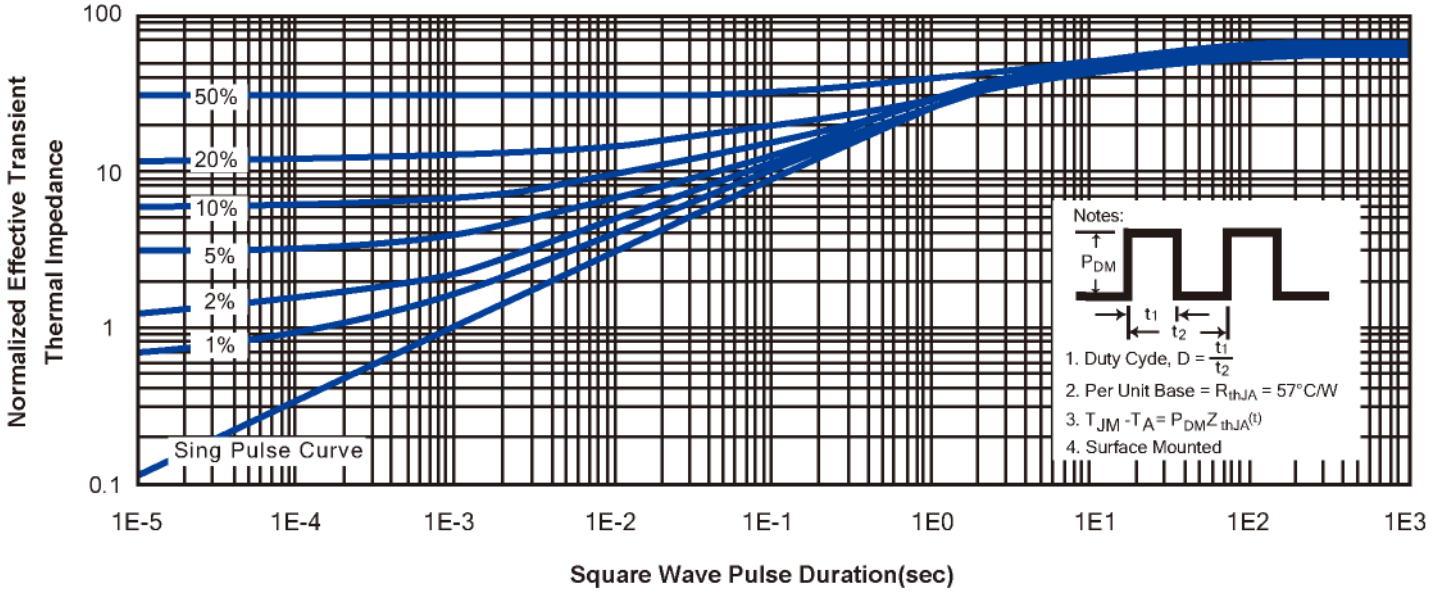
Maximum Forward Biased Safe Operating Area



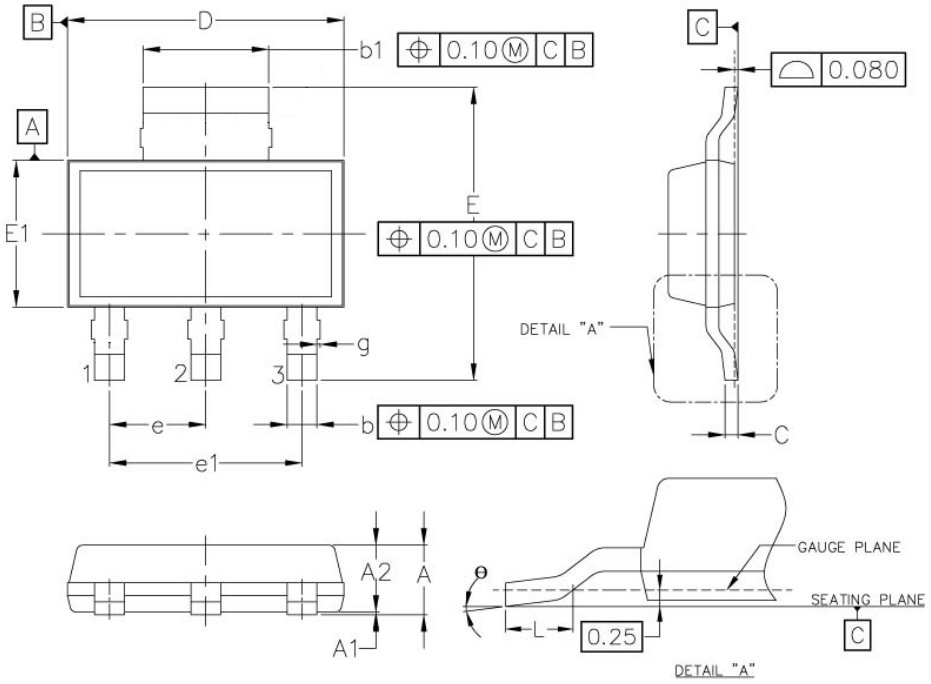
Body-diode characteristics



Normalized Thermal Transient Impedance, Junction-to-Ambient



SOT-223-3L Package Outline



SYMBOL	COMMON					
	DIMENSIONS MILLIMETER			DIMENSIONS INCH		
	MIN.	MOM.	MAX.	MIN.	MOM.	MAX.
A	—	—	1.80	—	—	0.0709
A1	0.02	—	0.10	0.0008	—	0.0039
A2	1.50	1.60	1.70	0.0591	0.0630	0.0669
b	0.66	0.76	0.84	0.0260	0.0300	0.0330
b1	2.90	3.00	3.10	0.1142	0.1181	0.1220
g	—	—	0.06	—	—	0.0020
C	0.23	0.30	0.35	0.0090	0.2560	0.1378
D	6.30	6.50	6.70	0.2480	0.2760	0.2638
E	6.70	7.00	7.30	0.2638	0.1378	0.2874
E1	3.30	3.50	3.70	0.1300	0.1378	0.1457
e	2.30 BSC			0.0906 BSC		
e1	4.60 BSC			0.1811 BSC		
L	0.81	—	—	0.0319	—	—
θ	0°	—	10°	0°	—	10°