

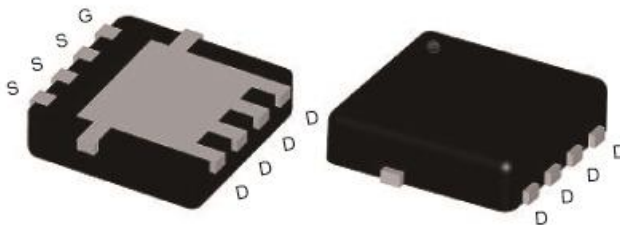
GENERAL DESCRIPTION

The ME7801S-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. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where Low-side switching , and low in-line power loss are needed in a very small outline surface mount package.

PIN CONFIGURATION

(DFN(S) 3X3)

Top View



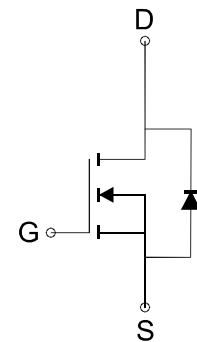
Ordering Information : ME7801S-G (Green product-Halogen free)

FEATURES

- $R_{DS(ON)} \leq 3m\Omega$ (typ.) @ $V_{GS}=10V$
- $R_{DS(ON)} \leq 4m\Omega$ (typ.) @ $V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Halogen free

APPLICATIONS

- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch

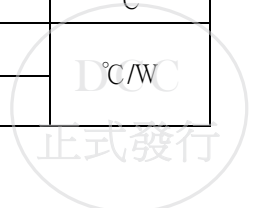


N-Channel MOSFET

Absolute Maximum Ratings (TA=25°C Unless Otherwise Noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current*	I_D	$T_C=25^\circ C$	66
		$T_C=70^\circ C$	53
		$T_A=25^\circ C$	21
		$T_A=70^\circ C$	17
Pulsed Drain Current	I_{DM}	198	A
Maximum Power Dissipation*	P_D	$T_C=25^\circ C$	27.8
		$T_C=70^\circ C$	17.8
		$T_A=25^\circ C$	2.8
		$T_A=70^\circ C$	1.8
Operating Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to 150	$^\circ C$
Thermal Resistance-Junction to Ambient*	$R_{\theta JA}$	45	$^\circ C/W$
Thermal Resistance-Junction to Case*	$R_{\theta JC}$	4.5	$^\circ C/W$

*The device mounted on 1in² FR4 board with 2 oz copper



Electrical Characteristics (T_A = 25°C Unless Otherwise Specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
STATIC						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μA	30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250 μA	1.1		2.1	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V			1	μA
R _{DS(ON)}	Drain-Source On-State Resistance ^a	V _{GS} =10V, I _D =20A		3	4	mΩ
		V _{GS} =4.5V, I _D =20A		4	5.5	
V _{SD}	Diode Forward Voltage	I _S =1.0A, V _{GS} =0V			1	V
DYNAMIC						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _D =20A		48.1		nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _D =20A		23.8		
Q _{gs}	Gate-Source Charge			9.6		
Q _{gd}	Gate-Drain Charge			12.2		
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, F=1MHz		2191		pF
C _{oss}	Output Capacitance			257		
C _{rss}	Reverse Transfer Capacitance			219		
R _g	Gate-Resistance	V _{DS} =0V, V _{GS} =0V, F=1MHz		1.6		Ω
t _{d(on)}	Turn-On Delay Time	V _{DS} =15V, R _L =15Ω V _{GS} =10V, R _G =3Ω		23.9		ns
t _r	Turn-On Rise Time			23.4		
t _{d(off)}	Turn-Off Delay Time			57.7		
t _f	Turn-Off Fall Time			16.8		

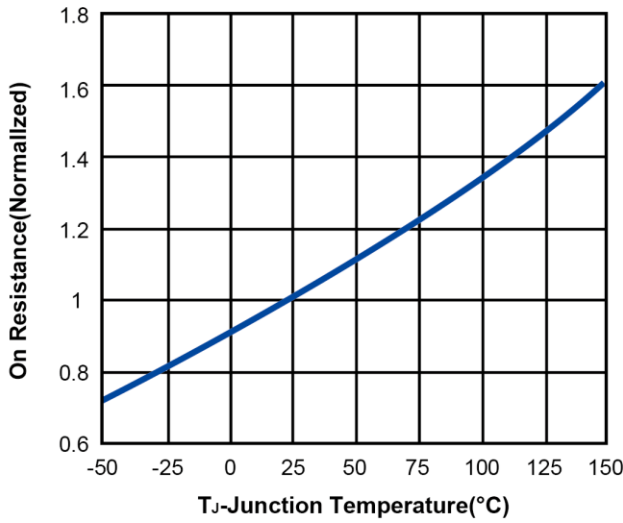
Note: a. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%, Guaranteed by design, not subject to production testing.

b. Force mos reserves the right to improve or change product design, functions, reliability, qualified manufacturer without notice.

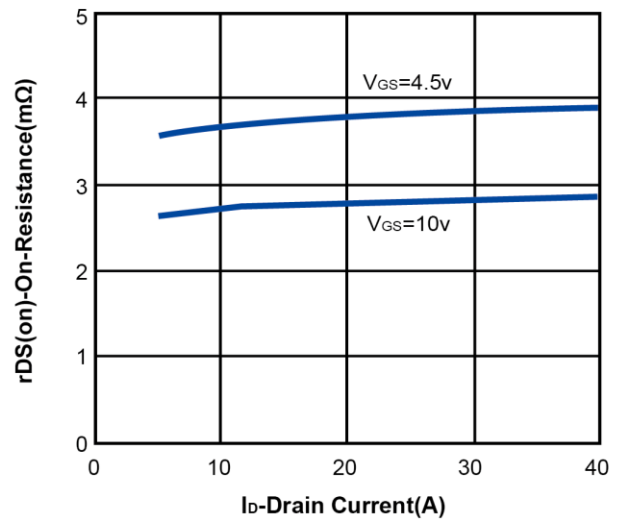


Typical Characteristics (T_J =25°C Noted)

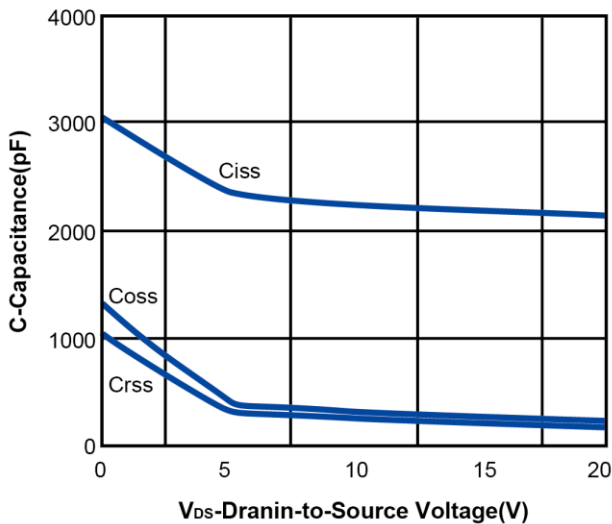
On Resistance vs. Junction Temperature



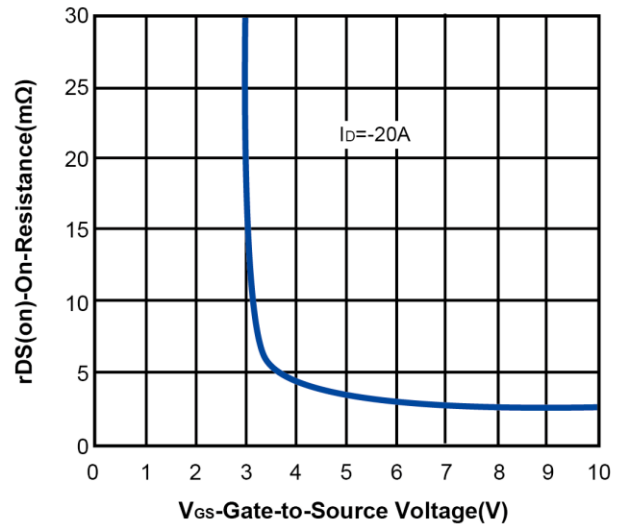
On Resistance vs. Drain Current



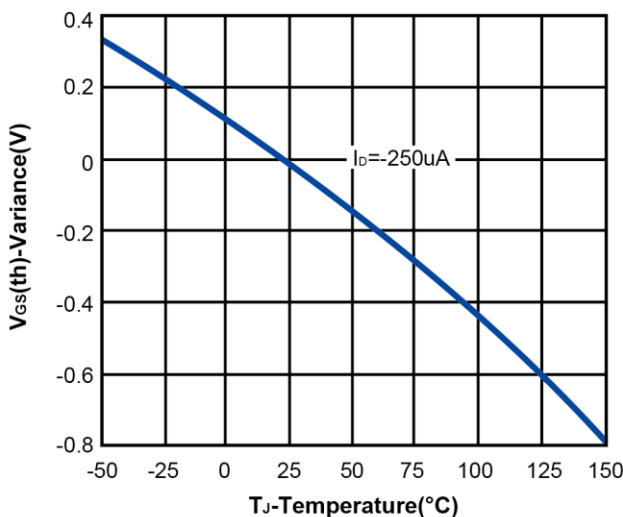
Capacitance



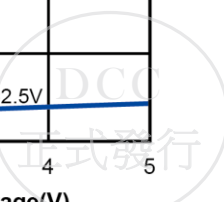
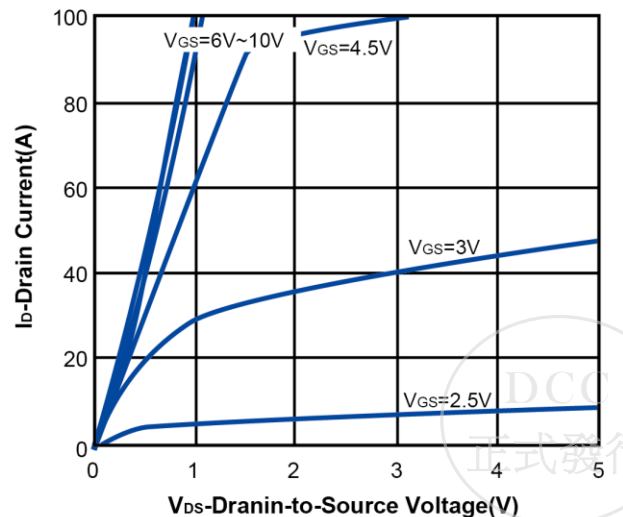
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage

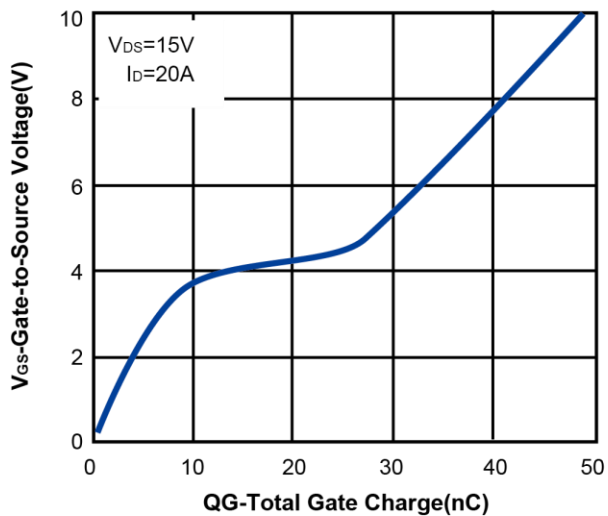


On-Region Characteristics

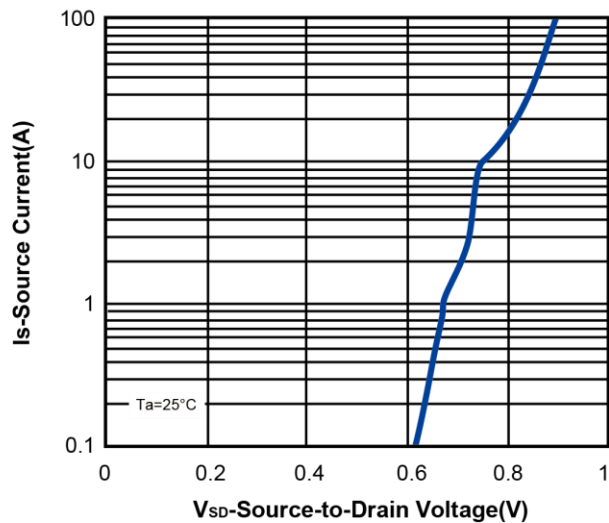


Typical Characteristics (T_J =25°C Noted)

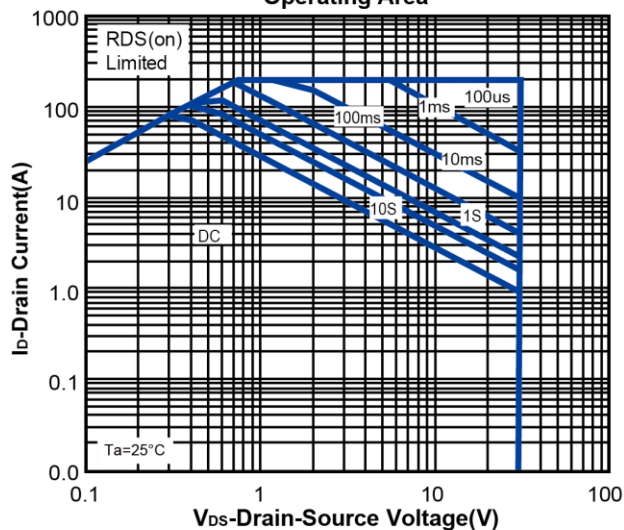
Gate Charge



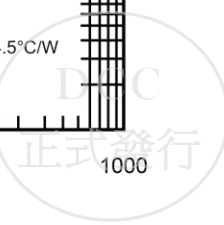
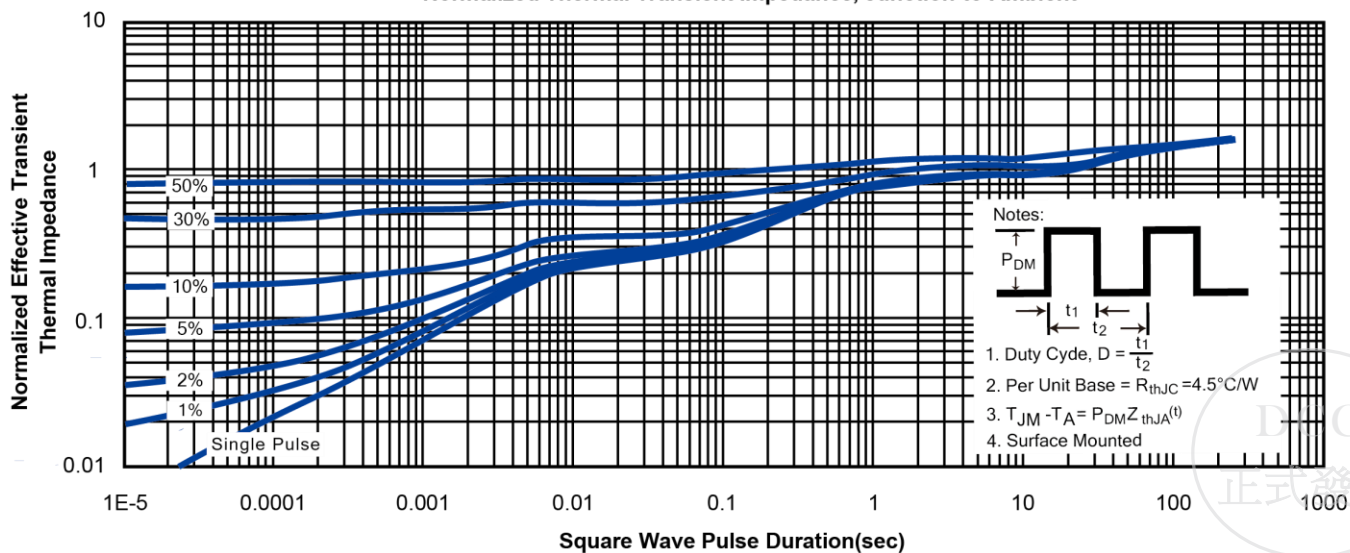
Body-diode characteristics

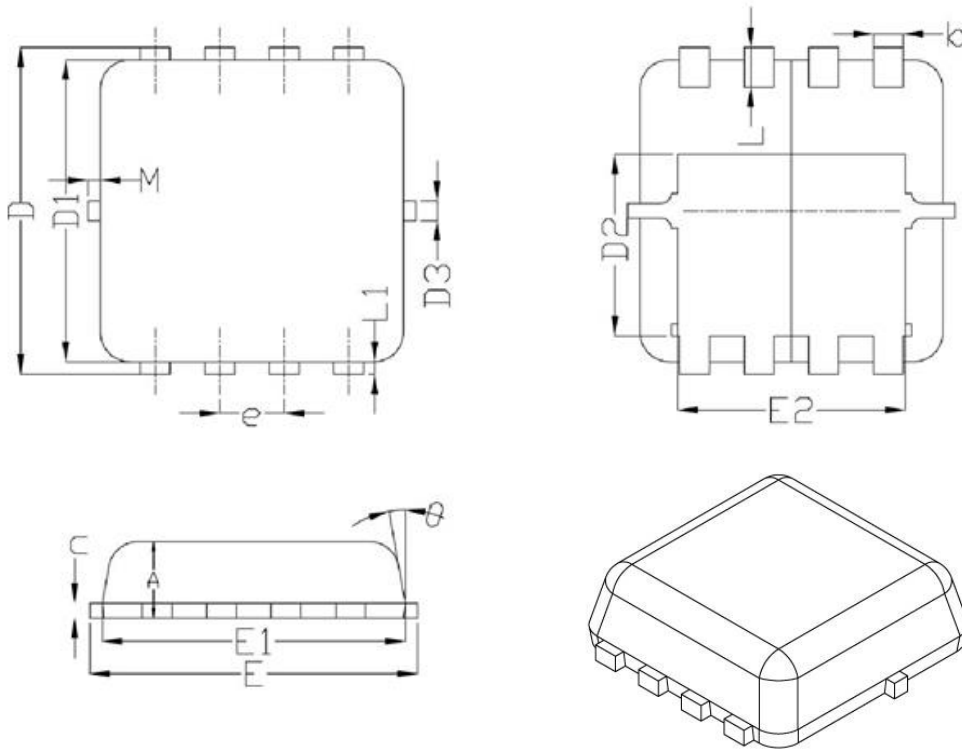


Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient



DFN(S)3X3 Package Outline


SYMBOL	DIMENSIONAL REQMTS	
	MIN	MAX
A	0.70	0.90
b	0.20	0.40
c	0.08	0.25
D	2.70	3.45
D1	2.20	3.20
D2	1.54	1.98
D3	0.10	0.30
E	3.15	3.45
E1	2.80	3.30
E2	2.25	2.65
e	0.65BSC	
H	0.28	0.68
L	0.30	0.50
L1	0.06	0.20
∅	---	12°
M	*	0.15
* Not specified		

