N-Channel 100V(D-S) MOSFET

GENERAL DESCRIPTION

The MEE7298-G is a N-Channel enhancement mode power field effect transistor, using Force-MOS patented Extended Trench Gate (ETG) technology. This advanced technology is especially tailored to minimize on state resistance and gate charge, and enhance avalanche capability. These devices are particularly suited for medium voltage application such as charger, adapter, notebook computer power management and other lighting dimming powered circuits, and low in-line power loss that are needed in a very small outline surface mount package.

FEATURES

- $R_{DS(ON)}$=5.85mΩ(typ.)@V_{GS}=10V
- $R_{DS(ON)}$=7.95mΩ(typ.)@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

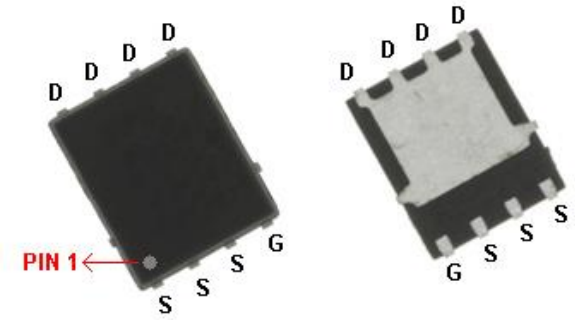
APPLICATIONS

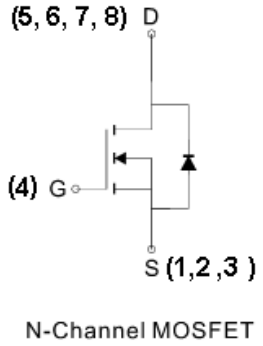
- Power Management
- Synchronous Rectification
- Load Switch

PIN CONFIGURATION

(PowerDFN 5x6)

Top View





N-Channel MOSFET

Ordering Information:MEE7298-G (Green product- Halogen free)

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current*	T_C=25℃	I_D	68	A
	T_C=70℃		54	
	T_A=25℃		13.6	
	T_A=70℃		10.8	
Pulsed Drain Current*		I_{DM}	203	A
Maximum Power Dissipation*	T_C=25℃	P_D	69	W
	T_C=70℃		44	
	T_A=25℃		2.8	
	T_A=70℃		1.8	
Operating Junction and Storage Temperature Range		TJ, Tstg	-55 to 150	℃
Thermal Resistance-Junction to Case*		$R_{\theta JC}$	1.8	℃/W
Junction-to-Ambient Thermal Resistance*		$R_{\theta JA}$	45	

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

* Chip silicon limitation current is 100A

Electrical Characteristics (T_A=25℃ Unless Otherwise Specified)

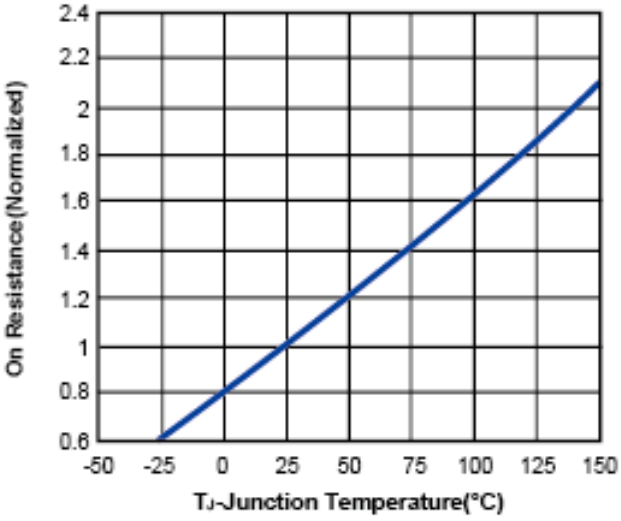
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1		3	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-State Resistance [a]	V_{GS}=10V, I_D=20A		5.85	7.2	mΩ
		V_{GS}=4.5V, I_D=20A		7.95	10.5	
V_{SD}	Diode Forward Voltage	I_S=1A, V_{GS}=0V			1	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=50V,V_{GS}=10V, I_D=20A		67		nC
Qg	Total Gate Charge	V_{DS}=50V,V_{GS}=4.5V, I_D=20A		35.3		
Qgs	Gate-Source Charge			12.8		
Qgd	Gate-Drain Charge			14.8		
Ciss	Input capacitance	V_{DS}=30V,V_{GS}=0V, f=1.0MHz		3737		pF
Coss	Output Capacitance			1084		
Crss	Reverse Transfer Capacitance			50		
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=50V, R_L=2.5Ω V_{GS}=10V,R_G=6Ω I_D=20A		30		ns
t_r	Turn-On Rise Time			91		
$t_{d(off)}$	Turn-Off Delay Time			78.5		
t_f	Turn-Off Fall Time			185.3		

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

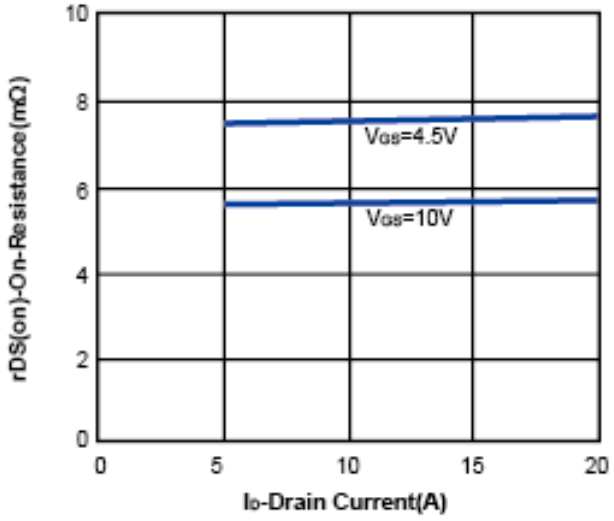
b. Force mos reserves the right to improve or change product design, functions, reliability, qualified manufacturer without notice.

Typical Characteristics (T_J =25℃ Noted)

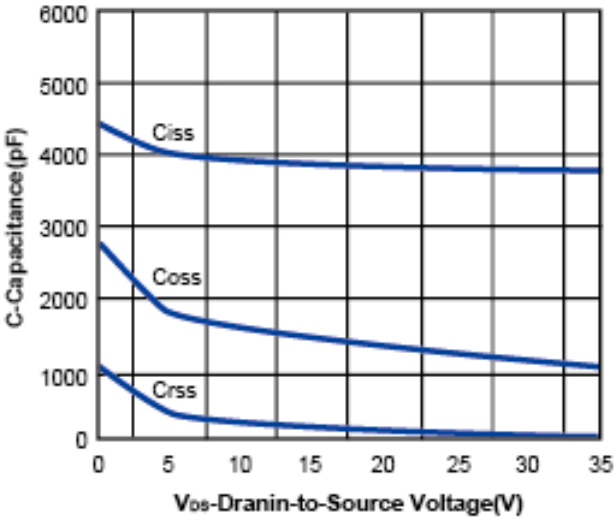
On Resistance vs. Junction Temperature



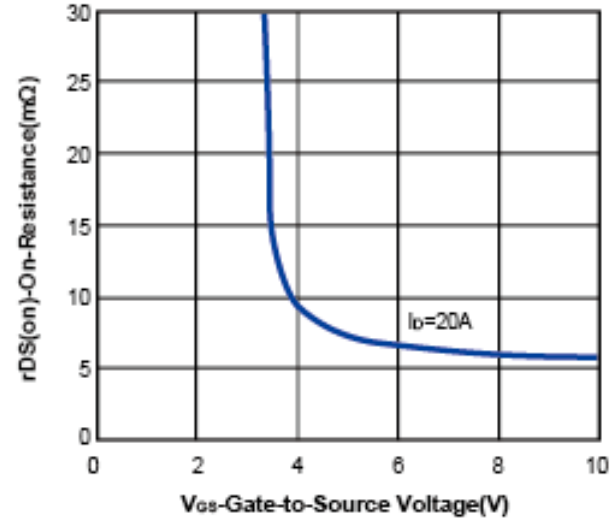
On Resistance vs. Drain Current



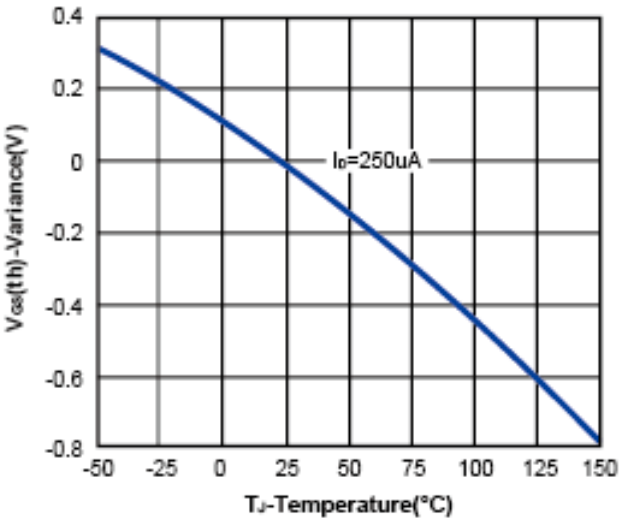
Capacitance



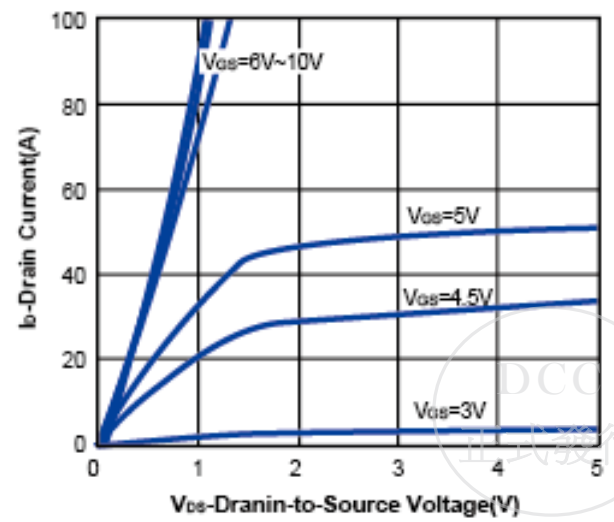
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



On-Region Characteristics



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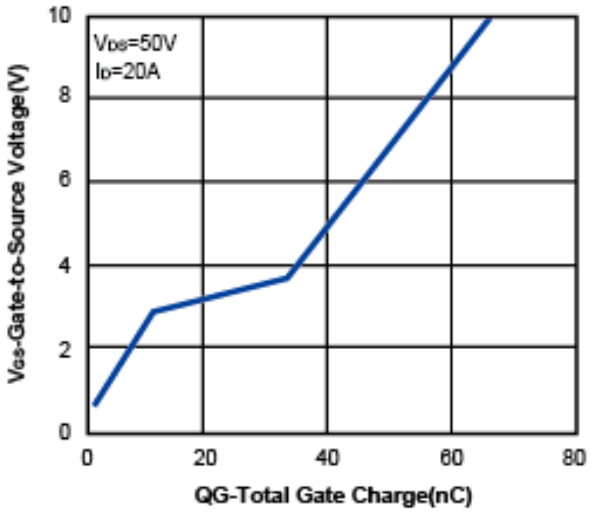
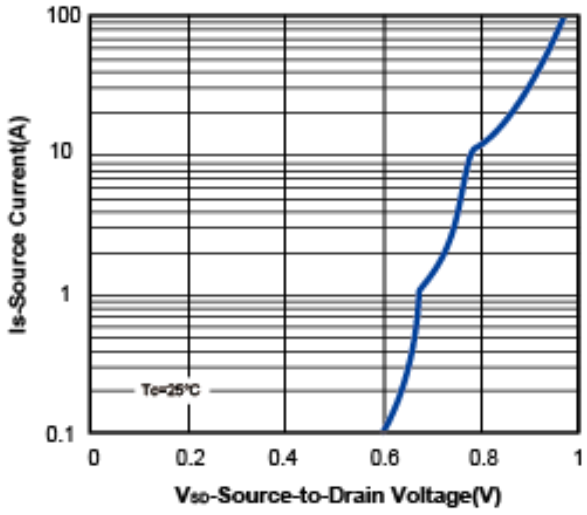
Typical Characteristics (T_J =25℃ Noted)

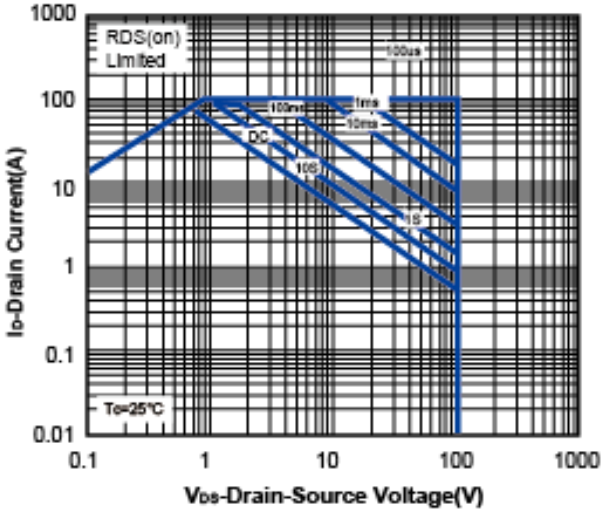
Gate Charge



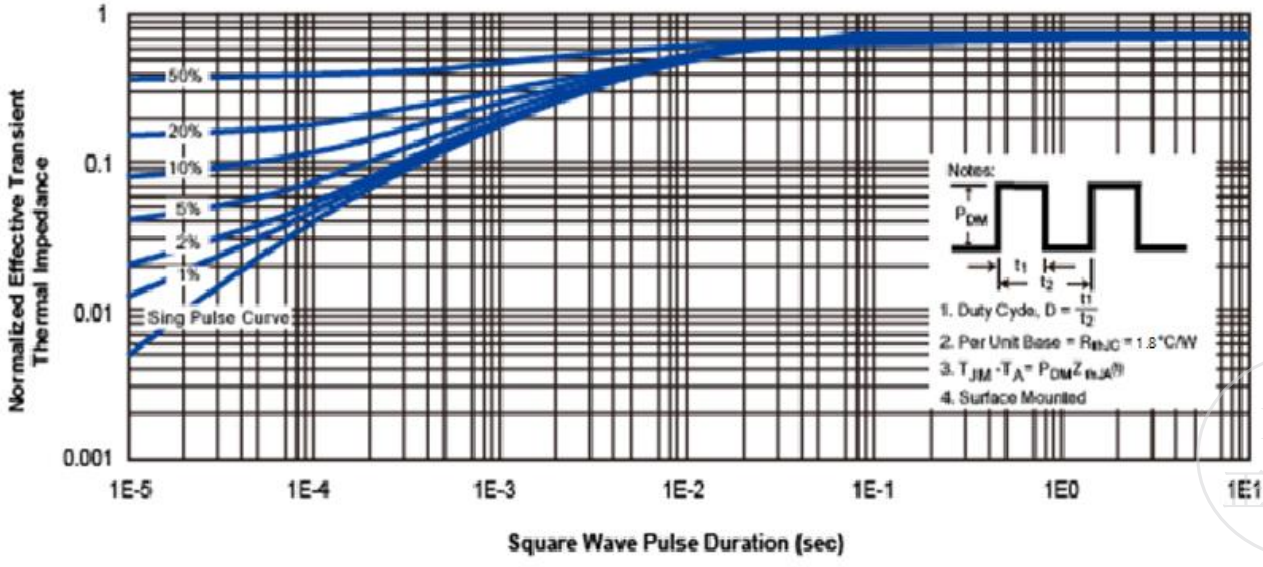
Body-diode characteristics



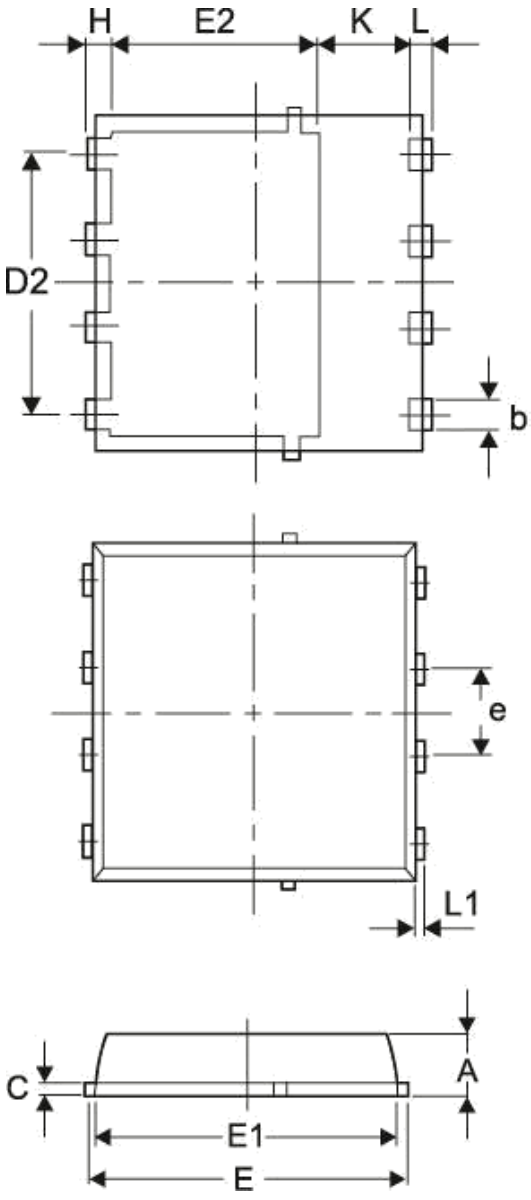
Maximum Forward Biased Safe Operating Area

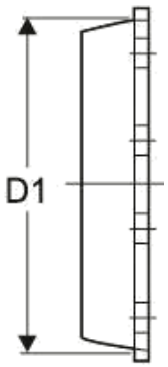


Normalized Thermal Transient Impedance, Junction-to-Case



PowerDFN 5x6 Package Outline





SYMBOL	MILLIMETERS (mm)		
	MIN	TYP	MAX
A	0.90	1.1	1.20
b	0.33	0.4	0.51
C	0.155	0.2	0.30
D1	4.80	5	5.20
D2	3.61	3.8	3.96
E	5.8	6	6.20
E1	5.6	5.8	5.90
E2	3.35	3.8	4.31
e	1.27 BSC		
H	0.35	0.5	0.7
K	1.20	-	-
L	0.35	0.5	0.71
L1	0.05	0.15	0.30