ME3491D/ME3491D-G

P-Channel 20V (D-S) MOSFET，ESD Protected

GENERAL DESCRIPTION

The ME3491D is the P-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 in-line power loss are needed in a very small outline surface mount package.

FEATURES

- $R_{DS(ON)} \leqq 50m\Omega @ V_{GS}=-4.5V$
- $R_{DS(ON)} \leqq 65m\Omega @ V_{GS}=-2.5V$
- $R_{DS(ON)} \leqq 82m\Omega @ V_{GS}=-1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

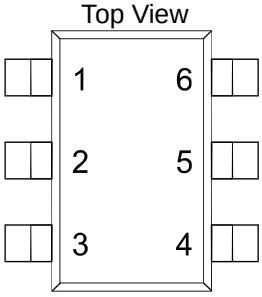
APPLICATIONS

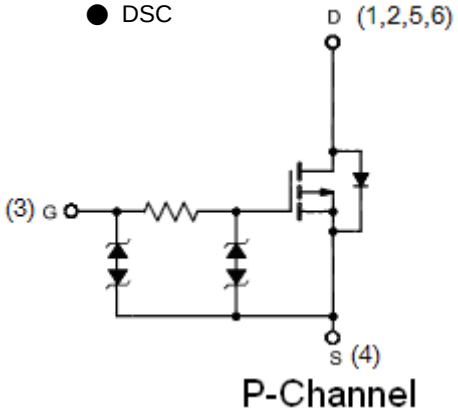
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch
- DSC

PIN CONFIGURATION

(TSOP-6)

Top View





Ordering Information: ME3491D (Pb-free)

ME3491D-G (Green product-Halogen free)

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current	T_A=25℃	I_D	-5	A
	T_A=70℃		-4	
Pulsed Drain Current		I_{DM}	-20	A
Maximum Power Dissipation	T_A=25℃	P_D	2	W
	T_A=70℃		1.3	
Operating Junction Temperature		T_J	-55 to 150	℃
Thermal Resistance-Junction to Ambient*		$R_{\theta JA}$	62.5	℃/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						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	-20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-0.45		-1	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±8V			±10	μA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-20V, V_{GS}=0V			-1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=-4.5V, I_D= -5.2A		40	50	mΩ
		V_{GS}=-2.5V, I_D= -4.4A		50	65	
		V_{GS}=-1.8V, I_D= -2A		62	82	
V_{SD}	Diode Forward Voltage	I_S=-1.7A, V_{GS}=0V		-0.7		V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=-6V, V_{GS}=-10V, I_D=-5.2A		26.8		nC
Qg	Total Gate Charge	V_{DS}=-6V, V_{GS}=-4.5V, I_D=-5.2A		13		
Qgs	Gate-Source Charge			1.9		
Qgd	Gate-Drain Charge			3.1		
Ciss	Input Capacitance	V_{DS}=-10V, V_{GS}=0V,f=1MHz		685		pF
Coss	Output Capacitance			115		
Crss	Reverse Transfer Capacitance			42		
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=-10V, R_L=10Ω V_{GS}=-4.5V, R_G=6Ω I_D=-1A		1790		ns
t_r	Turn-On Rise Time			1100		
$t_{d(off)}$	Turn-Off Delay Time			10100		
t_f	Turn-Off Fall Time			3410		

Notes: a. Pulse test; pulse width ≦ 300us, duty cycle≦ 2%

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

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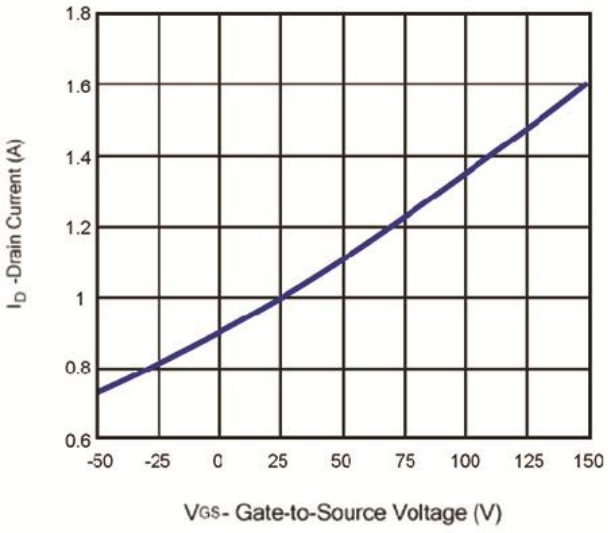
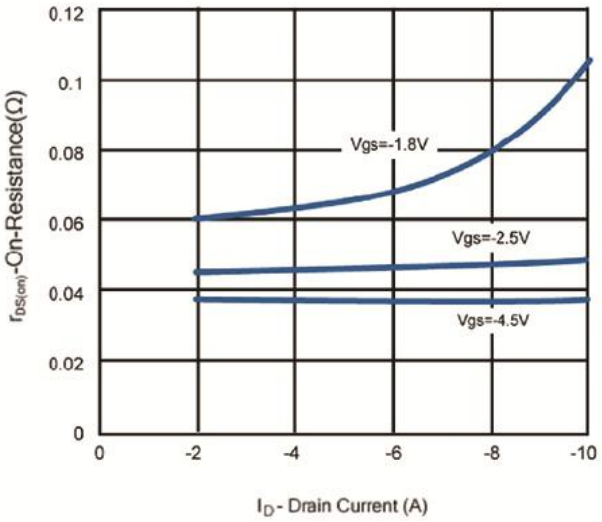
Typical Characteristics (T_J =25℃ Noted)

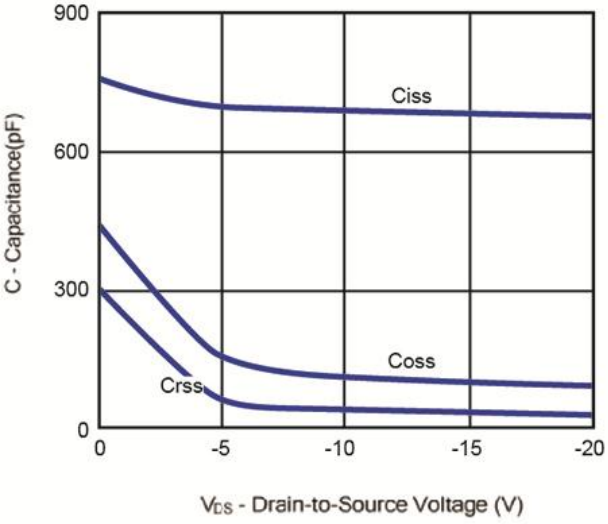
Transfer Characteristics



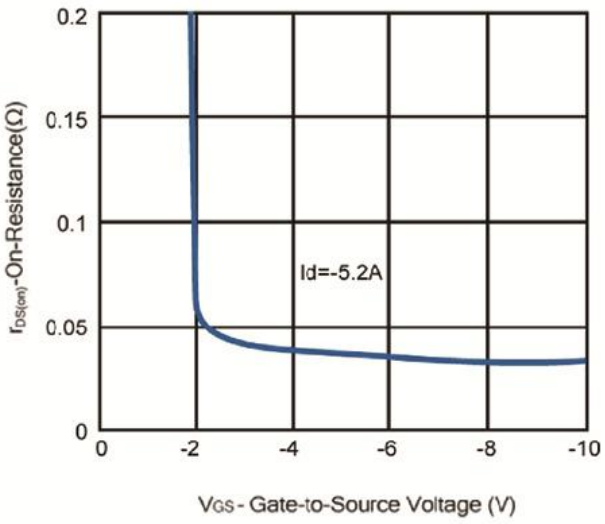
On-Resistance vs. Drain Current



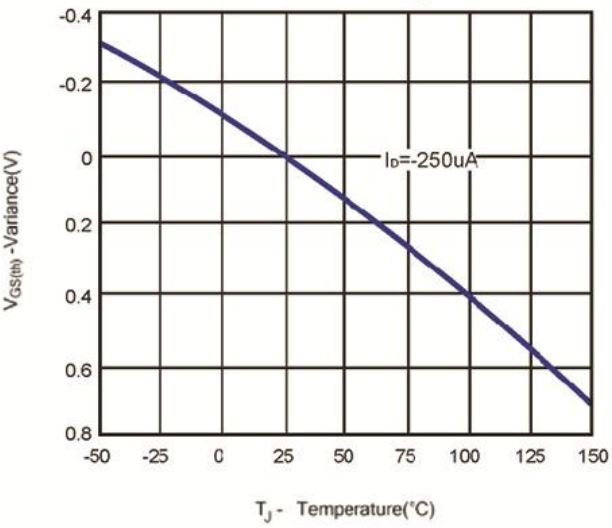
Capacitance



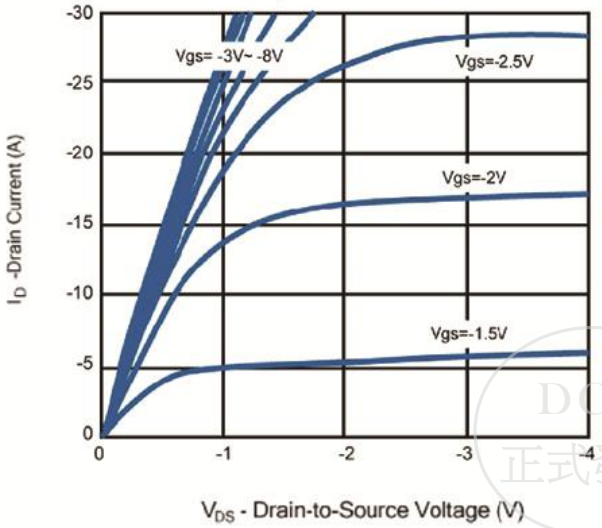
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



On-Region Characteristics



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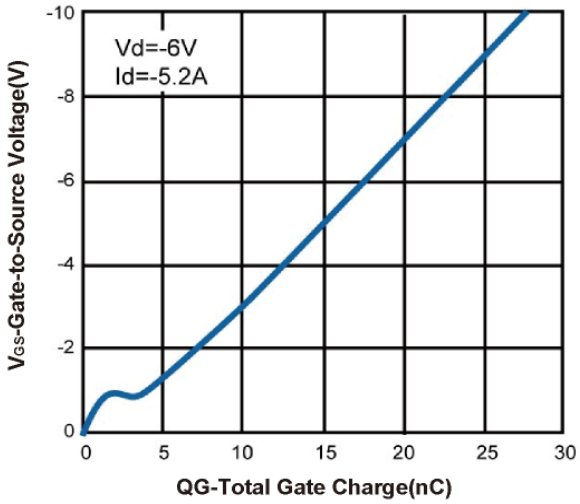
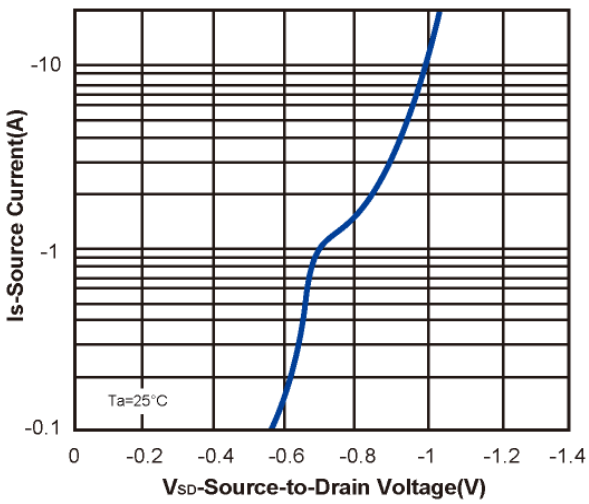
Typical Characteristics (T_J =25℃ Noted)

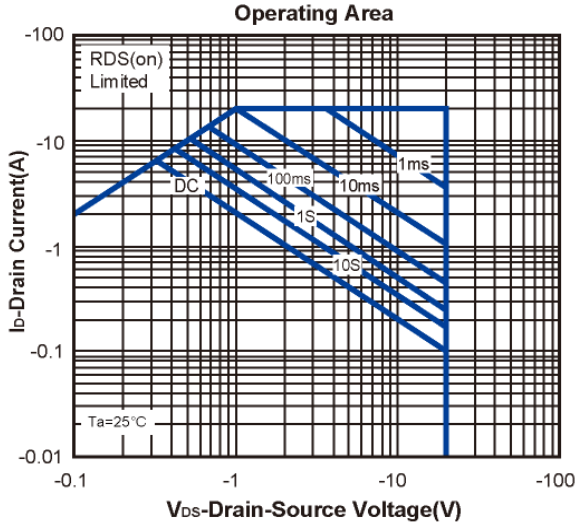
Gate Charge



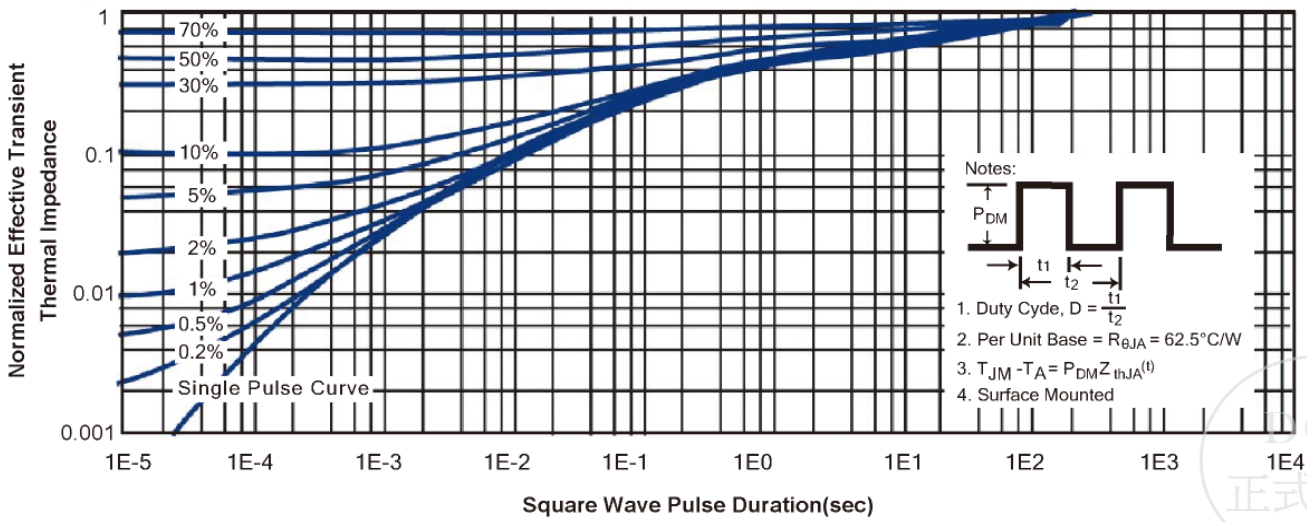
Body-diode characteristics



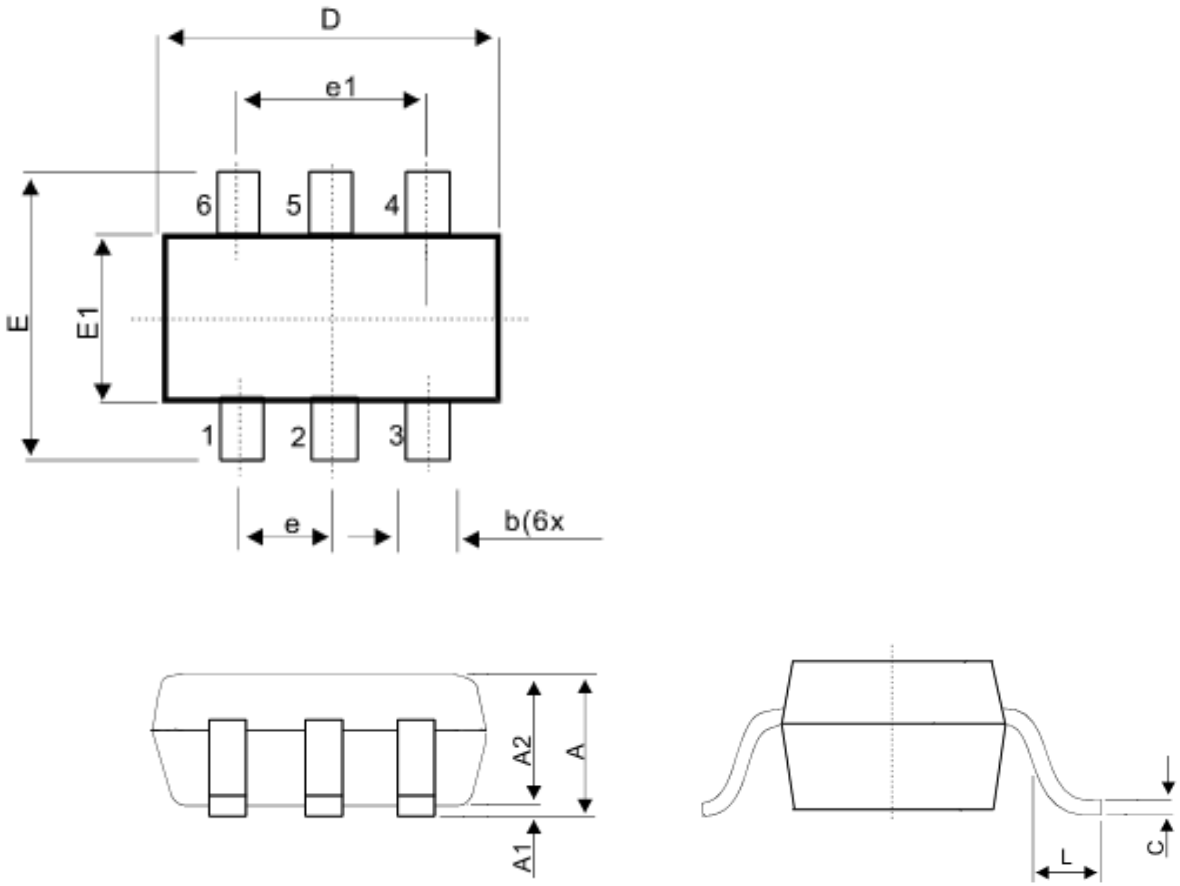
Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient



TSOP-6 Package Outline



SYMBOL	MILLIMETERS (mm)	
	MIN	MAX
A	0.90	1.20
A1	0.01	0.10
A2	0.90	1.15
b	0.25	0.50
C	0.10	0.20
D	2.80	3.10
E	2.60	3.00
E1	1.50	1.70
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60