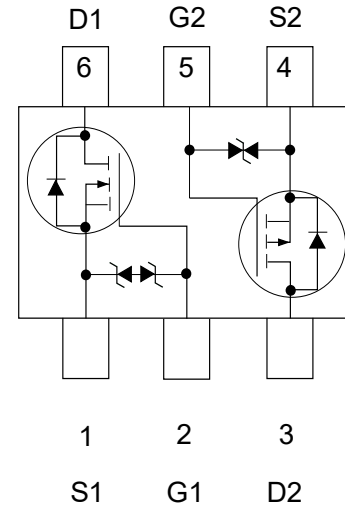


Description

The enhancement mode MOS is extremely high density cell and low on-resistance.

MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(\Omega)$	$I_D(A)$
N-Channel 20	0.2@ $V_{GS}=4.5V$	0.8
	0.25@ $V_{GS}=2.5V$	
	0.31@ $V_{GS}=1.8V$	
P-Channel -20	0.45@ $V_{GS}=-4.5V$	-0.8
	0.62@ $V_{GS}=-2.5V$	
	0.86@ $V_{GS}=-1.8V$	


Thermal resistance ratings

Parameter	Symbol	Typical	Maximum	Units
Thermal Resistance-Junction to Ambient, Note:a	$R_{\theta JA}$	340	430	$^{\circ}C/W$
Thermal Resistance-Junction to Ambient, Note:b	$R_{\theta JA}$	465	555	$^{\circ}C/W$
Thermal Resistance-Junction to Case	$R_{\theta JC}$	280	320	$^{\circ}C/W$

a: Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

b: Surface mounted on FR4 Board using minimum pad size, 1oz copper

N-Channel
Absolute maximum rating@25°C

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 8	V
Drain Current	Continuous	I_D	0.8	A
	Pulsed	I_D	3.0	A
Total Power Dissipation	$T_A=25^{\circ}C$, Note:a	P_D	290	mW
	$T_A=25^{\circ}C$, Note:b	P_D	220	mW

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=1mA, V_{GS}=0V$	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 8V$	-	-	± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10V, I_D=1mA$	0.4	-	0.8	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=0.65A$	-	200	250	$m\Omega$
		$V_{GS}=2.5V, I_D=0.45A$	-	250	300	$m\Omega$
		$V_{GS}=1.8V, I_D=0.25A$	-	310	450	$m\Omega$
Forward transfer admittance	g_{FS}	$V_{DS}=10V, I_D=300mA$	-	1.6	-	s
Input Capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=10V, f=1MHz$	-	48	-	pF
Output Capacitance	C_{OSS}		-	13	-	pF
Reverse Transfer Capacitance	C_{RSS}		-	10	-	pF
Total Gate Charge	Q_G	$V_{GS}=4.5V, V_{DS}=10V, I_D=0.01A$	-	1.0	-	nC
Gate-Source Charge	Q_{GS}		-	0.1	-	nC
Gate-Drain Charge	Q_{GD}		-	0.42	-	nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, V_{GS}=4.0V, R_G=10\Omega, R_L=67\Omega, I_D=150mA$	-	12	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	50	-	ns
Turn-On Rise Time	t_r		-	13	-	ns
Turn-On Fall Time	t_f		-	25	-	ns
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=100mA$	-	0.7	1	V

P-Channel

Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current	Continuous	-0.8	A
	Pulsed	-3	A
Total Power Dissipation	$T_A=25^\circ C, \text{Note:a}$	290	mW
	$T_A=25^\circ C, \text{Note:b}$	220	mW

Electrical characteristics per line @ 25 °C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$I_D = -250\mu A, V_{GS} = 0V$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16V, V_{GS} = 0V$	-	-	-1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$	-	-	± 10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = -250\mu A$	-0.45	-0.55	-0.85	V
Drain-to-source On-resistance (Note 5)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -700mA$	-	450	700	$m\Omega$
		$V_{GS} = -2.5V, I_D = -300mA$	-	620	850	$m\Omega$
		$V_{GS} = -1.8V, I_D = -250mA$	-	860	1200	$m\Omega$
Forward Transconductance	g_{FS}	$V_{DS} = -5V, I_D = -450mA$	-	1.25	-	S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS} = 0V, V_{DS} = -10V,$ $f = 1MHz$	-	72	-	pF
Output Capacitance	C_{OSS}		-	9.5	-	pF
Reverse Transfer Capacitance	C_{RSS}		-	9.8	-	pF
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -4.5V, V_{DS} = -10V,$ $I_D = -450mA$	-	0.9	-	nC
Threshold Gate Charge	$Q_{G(TH)}$		-	0.1	-	nC
Gate-to-Source Charge	Q_{GS}		-	0.15	-	nC
Gate-to-Drain Charge	Q_{GD}		-	0.3	-	nC
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = -4.5V, V_{DS} = -10V,$ $I_D = -450mA$ $R_G = 6\Omega$	-	43	-	nS
Rise Time	t_r		-	137	-	nS
Turn-Off Delay Time	$t_d(OFF)$		-	1450	-	nS
Fall Time	t_f		-	2050	-	nS
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = -150mA$	-0.5	-0.65	-1.1	V

N-Channel

Typical Characteristics

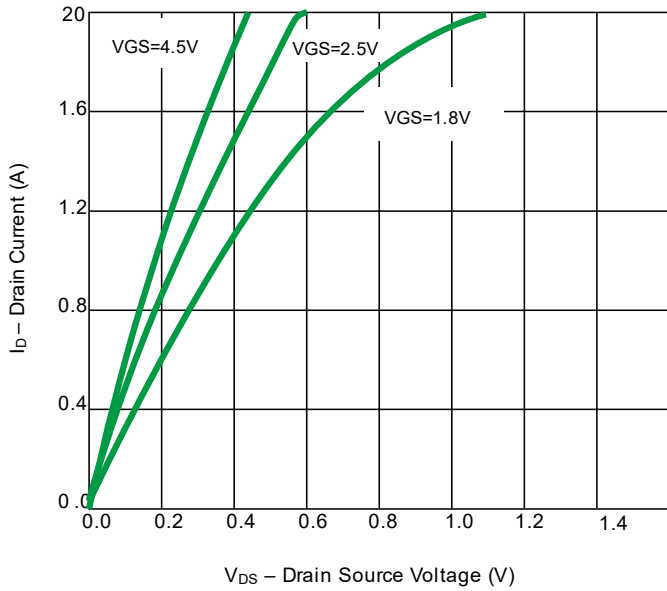


Fig 1. Output Characteristics

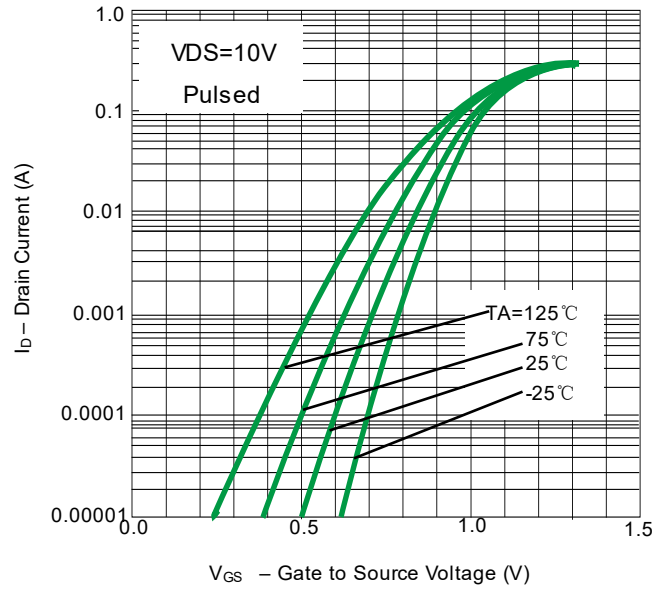


Fig 2. Transfer Characteristics

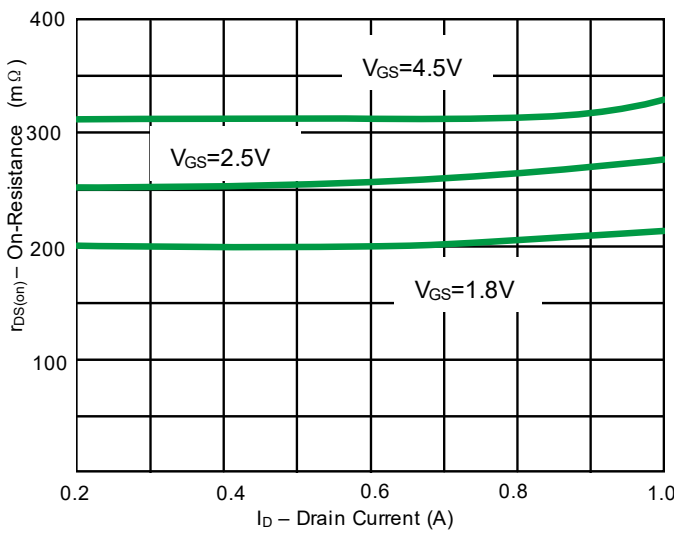


Fig 3. On-Resistance vs. Drain Current

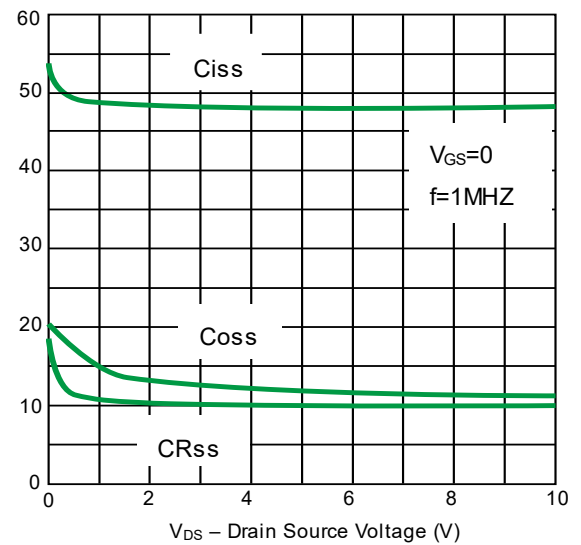


Fig 4. Capacitance

P-Channel

Typical Characteristics

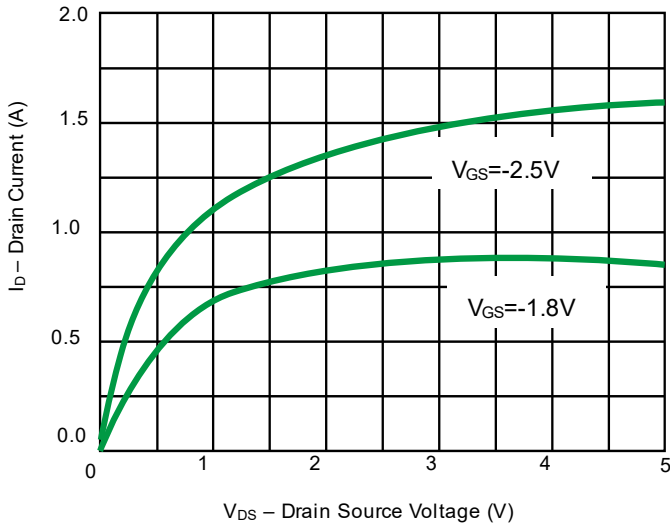


Fig 1. Output Characteristics

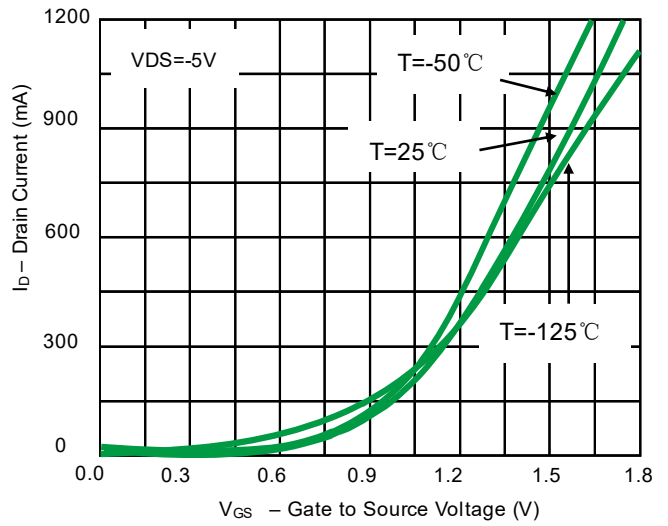


Fig 2. Transfer Characteristics

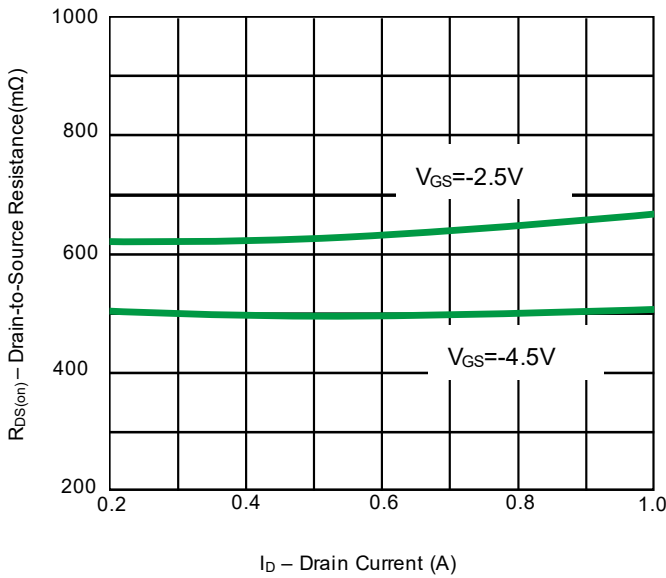


Fig 3. On-Resistance vs. Drain Current

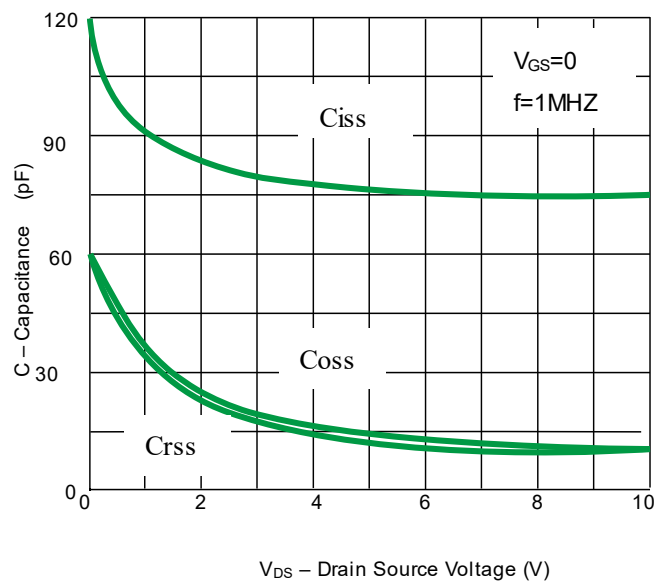
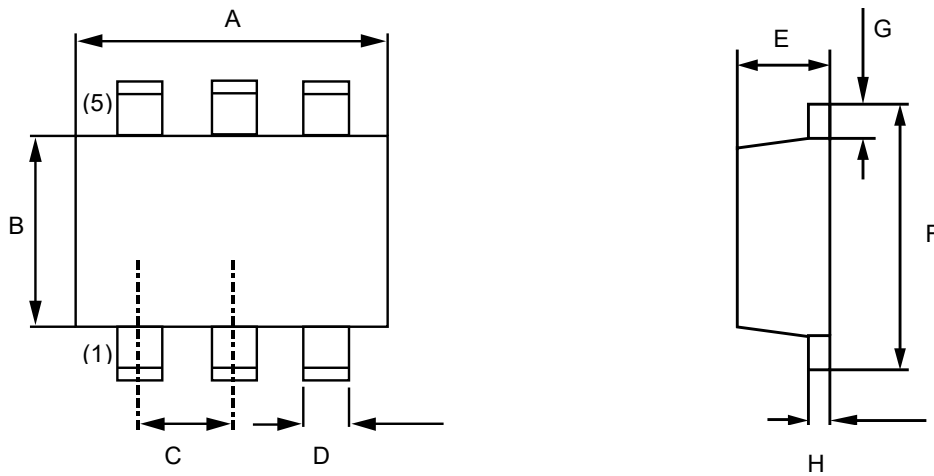
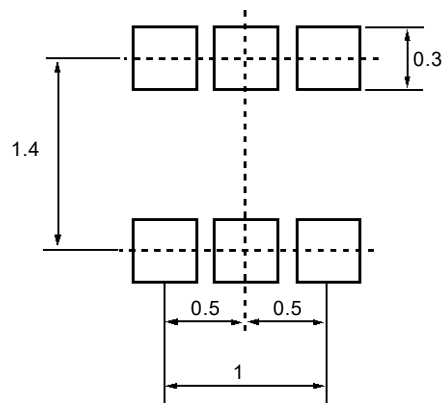


Fig 4. Capacitance

Product dimension (SOT-563)




Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.50	1.70	0.059	0.067
B	1.10	1.30	0.043	0.051
C	0.50BSC		0.020BSC	
D	0.17	0.27	0.007	0.011
E	0.50	0.60	0.020	0.024
F	1.50	1.70	0.059	0.067
G	0.10	0.30	0.004	0.012
H	0.08	0.16	0.003	0.006



Ordering information

Device	Package	Shipping
PDM6ET20V08E	SOT-563 (Pb-Free)	3000 / Tape & Reel


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