P-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
–20	0.1 @ V_{GS} = –4.5 V	–4.5
	0.135 @ V_{GS} = –2.5 V	–3.8

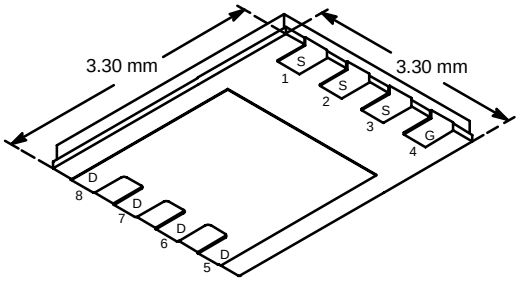
FEATURES

- TrenchFET® Power MOSFETS: 2.5-V Rated
- New PowerPAK™ Package
  - Low Thermal Resistance, R_{thJC}
  - Low 1.07-mm Profile

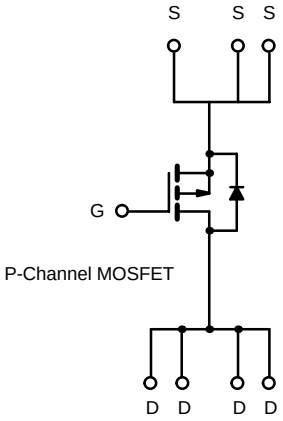
APPLICATIONS

- Load Switching
- PA Switching

PowerPAK™ 1212-8



Bottom View



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	–20		V
Gate-Source Voltage		V_{GS}	±8		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	–4.5	–2.9	A
	T_A = 85°C		–3.2	–2.1	
Pulsed Drain Current		I_{DM}	–20		
continuous Source Current (Diode Conduction)[a]		I_S	–3.0	–1.3	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	3.5	1.5	W
	T_A = 85°C		1.9	0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient[a]	t ≤ 10 sec	R_{thJA}	28	35	°C/W
	Steady State		65	81	
Maximum Junction-to-Case	Steady State	R_{thJC}	4.5	5.6	

Notes
a. Surface Mounted on 1” x 1” FR4 Board.

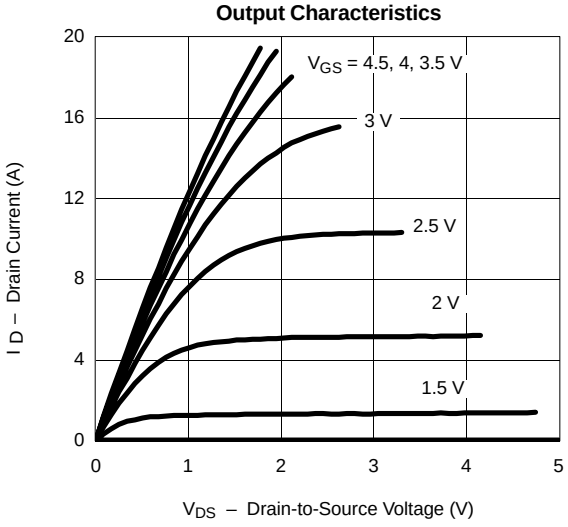
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = –250 µA	–0.45			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±4.5 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = –20 V, V_{GS} = 0 V			–1	µA
		V_{DS} = –20 V, V_{GS} = 0 V, T_J = 70°C			–5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = –5 V, V_{GS} = –4.5 V	–10			A
		V_{DS} = –5 V, V_{GS} = –2.5 V	–4			
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = –4.5 V, I_D = –3.3 A		0.078	0.1	Ω
		V_{GS} = –2.5 V, I_D = –2.9 A		0.110	0.135	
Forward Transconductance[a]	g_{fs}	V_{DS} = –10 V, I_D = –3.3 A		8.8		S
Diode Forward Voltage[a]	V_{SD}	I_S = –1.6 A, V_{GS} = 0 V		0.8	–1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = –10 V, V_{GS} = –4.5 V, I_D = –4.5 A		8.6	14	nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			3.1		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = –10 V, R_L = 10 Ω I_D ≅ –1.6 A, V_{GEN} = –4.5 V, R_G = 6 Ω		27	50	ns
Rise Time	t_r			17	30	
Turn-Off Delay Time	$t_{d(off)}$			52	80	
Fall Time	t_f			45	70	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = –1.6 A, di/dt = 100 A/µs		50	80	

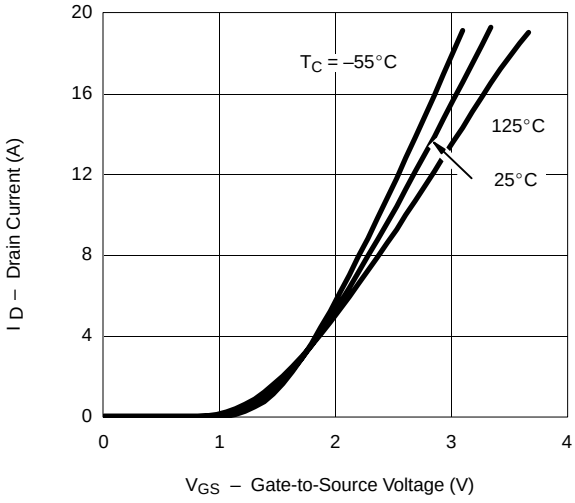
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

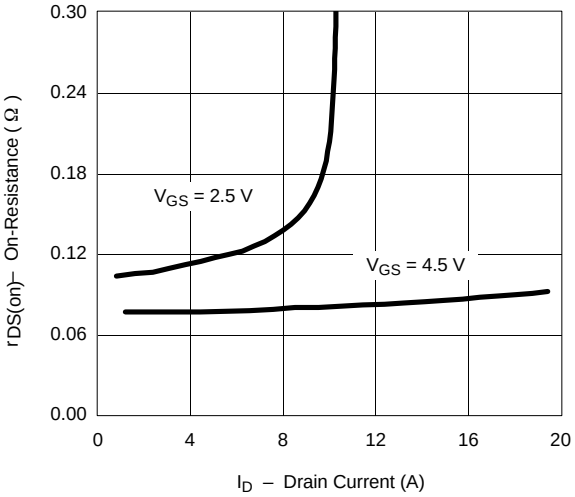


Transfer Characteristics

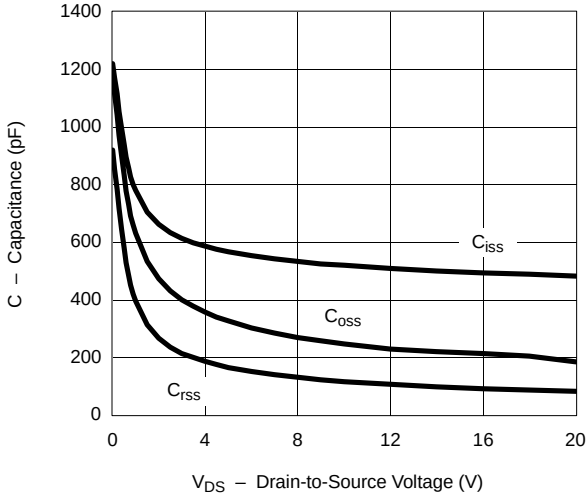


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

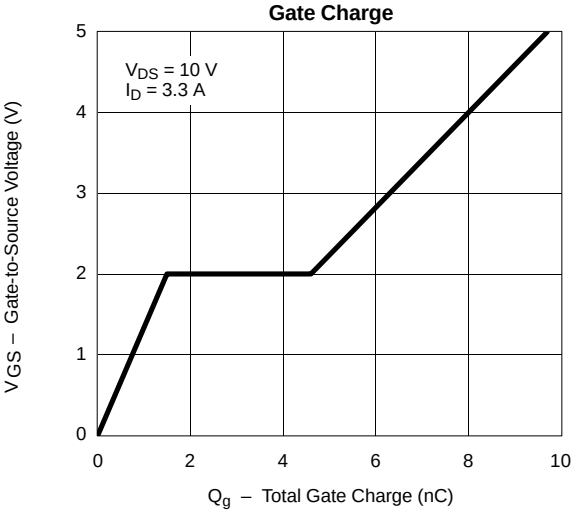
On-Resistance vs. Drain Current



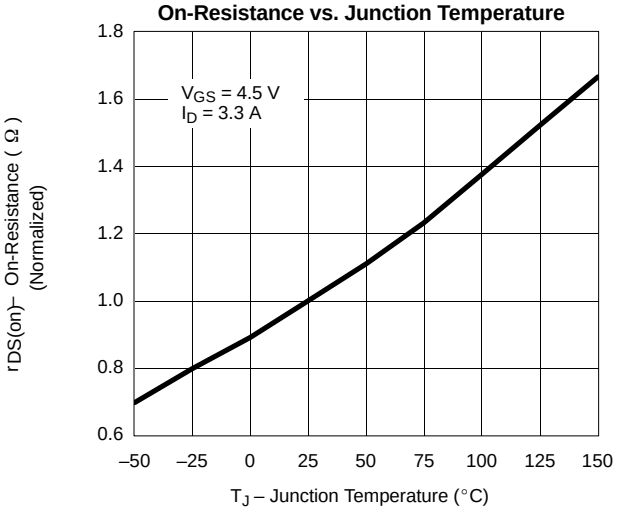
Capacitance



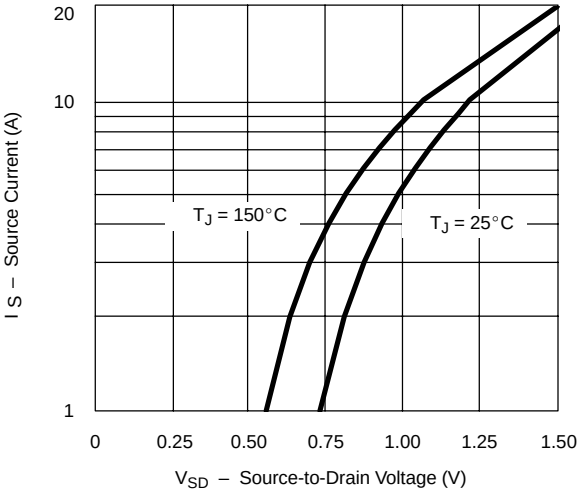
Gate Charge



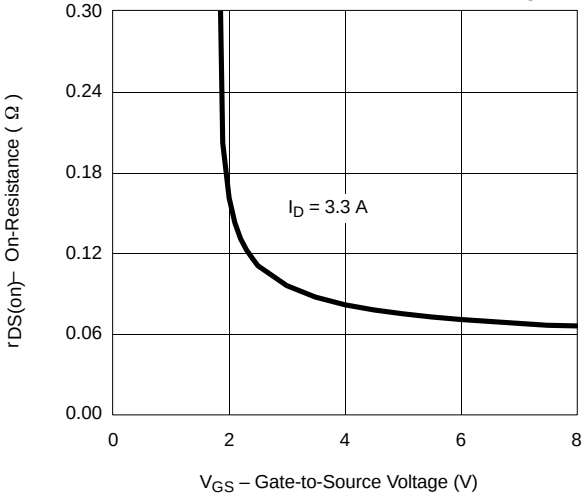
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

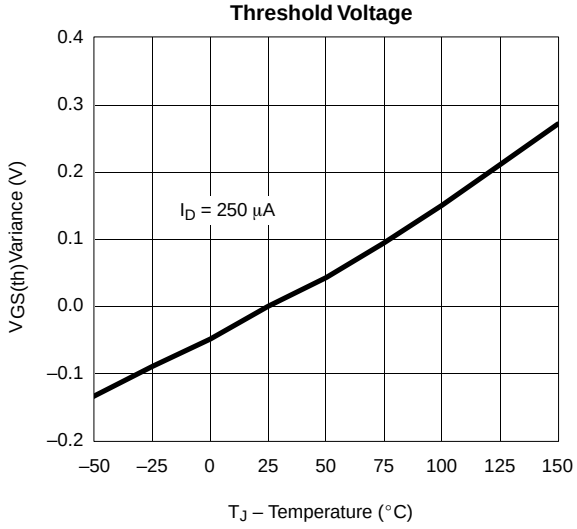


On-Resistance vs. Gate-to-Source Voltage

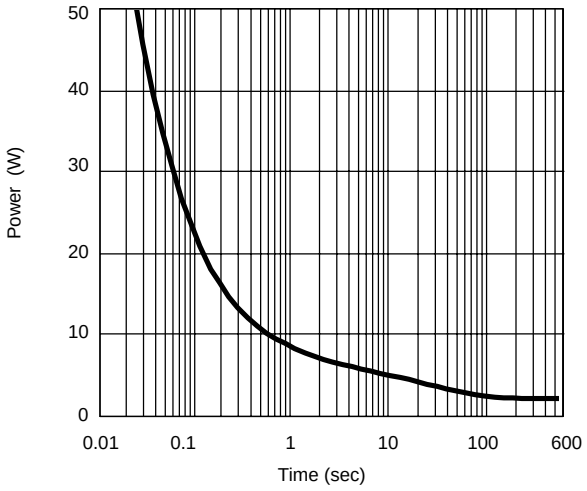


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

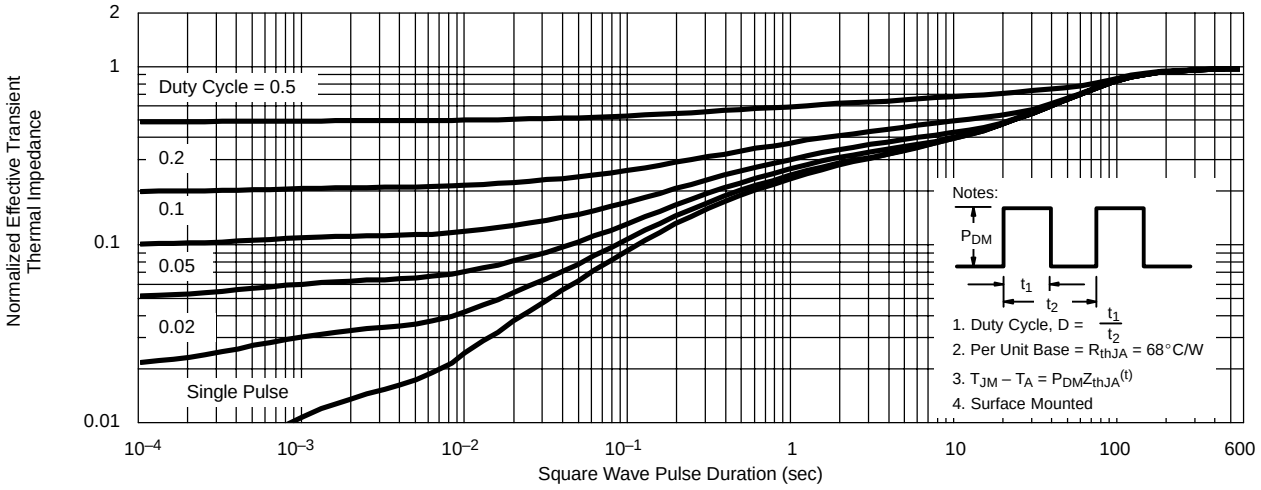
Threshold Voltage



Single Pulse Power, Juncion-To-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case