APM2317

P-Channel Enhancement Mode MOSFET

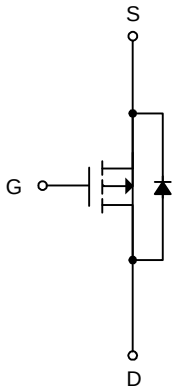
Features

- -20V/-4.5A ,
  $R_{DS(ON)}$=28mΩ (typ.) @ V_{GS}=-4.5V
  $R_{DS(ON)}$=38mΩ (typ.) @ V_{GS}=-2.5V
  $R_{DS(ON)}$=55mΩ (typ.) @ V_{GS}=-1.8V
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems

Pin Description



P-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	
I_D*	Continuous Drain Current	V_{GS}=-4.5V	-4.5	A
I_{DM}*	300μs Pulsed Drain Current		-18	
I_S*	Diode Continuous Forward Current		-1	A
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
P_D*	Maximum Power Dissipation	T_A=25°C	0.83	W
$R_{\theta JA}$*	Thermal Resistance-Junction to Ambient		150	°C/W

Note : *Surface Mounted on 1in² pad area, t ≤ 10sec.

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	APM2317			Unit
			Min.	Typ.	Max.	
STATIC CHARACTERISTICS						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-16V, V_{GS}=0V	-	-	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-0.5	-0.7	-1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-State Resistance	V_{GS}=-4.5V, I_{DS}=-4.5A	-	28	35	mΩ
		V_{GS}=-2.5V, I_{DS}=-2.5A	-	38	50	
		V_{GS}=-1.8V, I_{DS}=-2A	-	55	75	
V_{SD} [a]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.7	-1.3	V
GATE CHARGE CHARACTERISTICS [b]						
Q_g	Total Gate Charge	V_{DS}=-10V, V_{GS}=-4.5V, I_{DS}=-4.5A	-	14	20	nC
Q_{gs}	Gate-Source Charge		-	2.1	-	
Q_{gd}	Gate-Drain Charge		-	4.7	-	

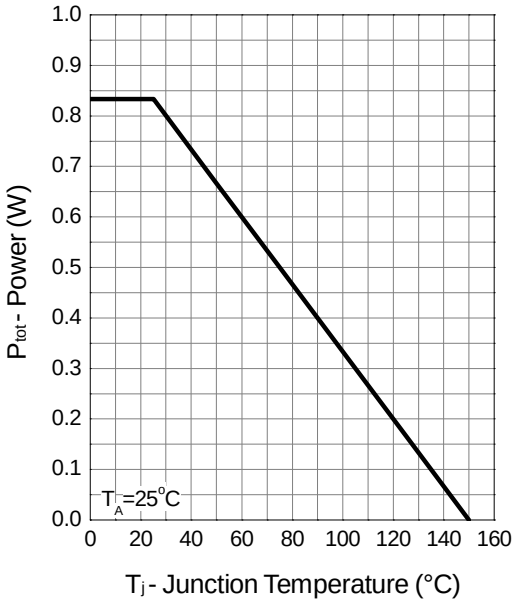
Electrical Characteristics (Cont.) (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	APM2317A			Unit
			Min.	Typ.	Max.	
DYNAMIC CHARACTERISTICS [b]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	7	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-10V, Frequency=1.0MHz	-	1520	-	pF
C_{oss}	Output Capacitance		-	225	-	
C_{rss}	Reverse Transfer Capacitance		-	165	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-10V, R_L=10Ω, I_{DS}=-1A, V_{GEN}=-4.5V, R_G=6Ω	-	6	12	ns
t_r	Turn-on Rise Time		-	13	24	
$t_{d(OFF)}$	Turn-off Delay Time		-	86	156	
t_f	Turn-off Fall Time		-	42	77	
t_{rr}	Reverse Recovery Time	I_{SD}=-4.5A, dI_{SD}/dt =100A/μs	-	21	-	ns
q_{rr}	Reverse Recovery Charge		-	9	-	nC

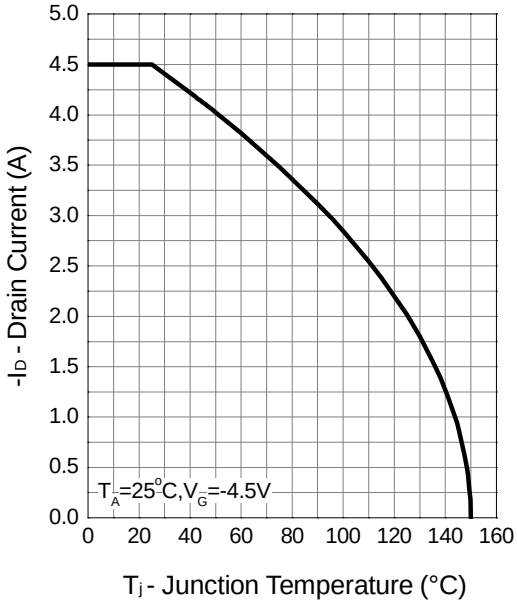
Note a : Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note b : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

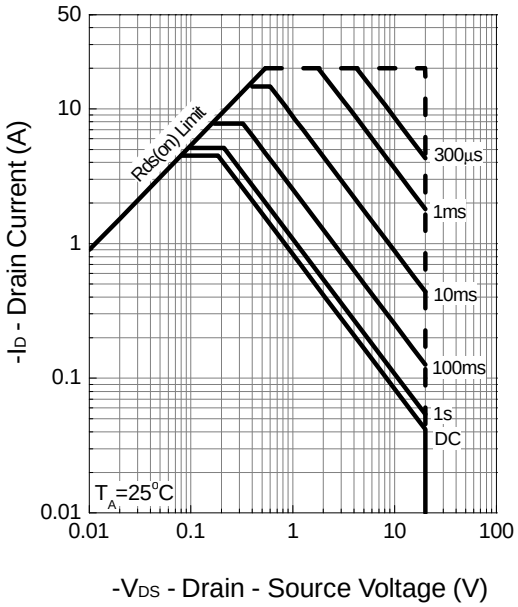
Power Dissipation



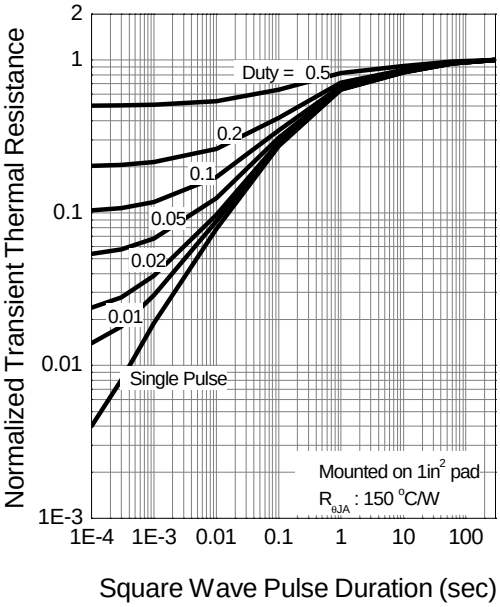
Drain Current



Safe Operation Area

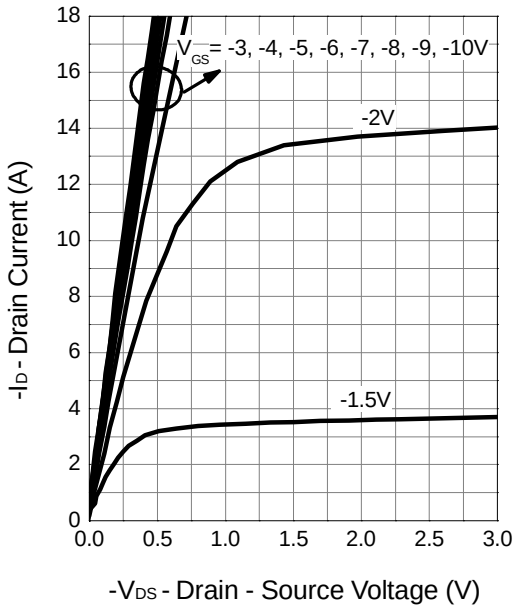


Thermal Transient Impedance

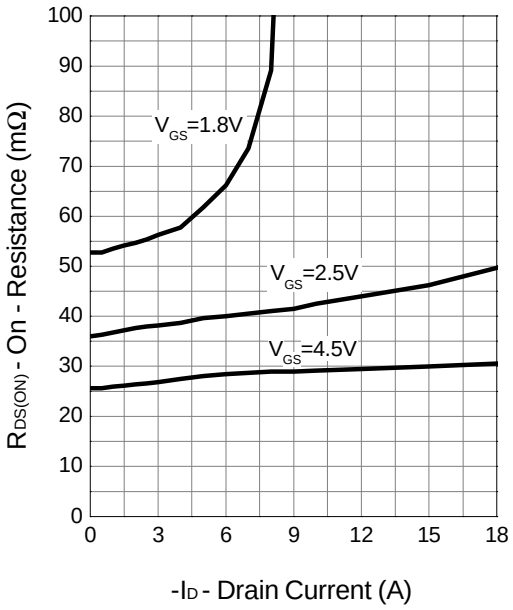


Typical Operating Characteristics (Cont.)

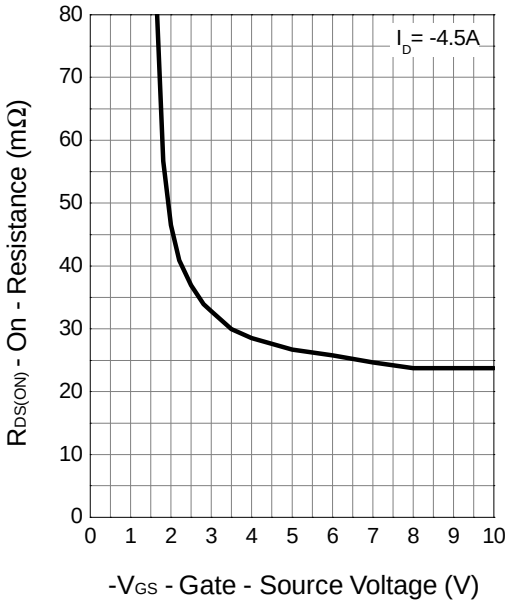
Output Characteristics



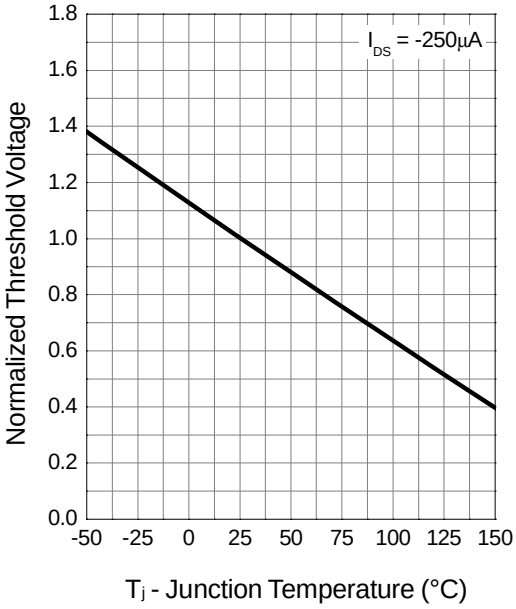
Drain-Source On Resistance



Drain-Source On Resistance

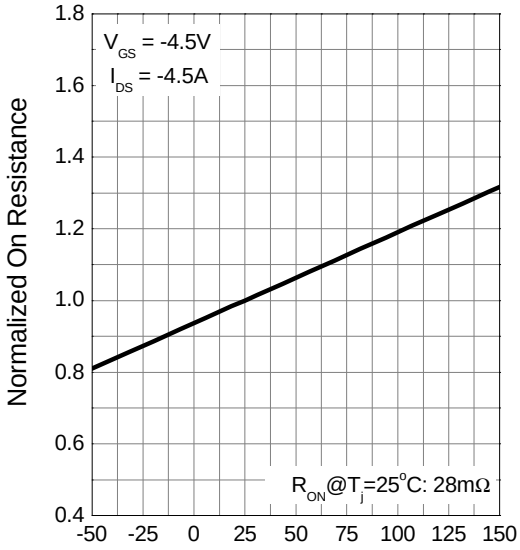


Gate Threshold Voltage

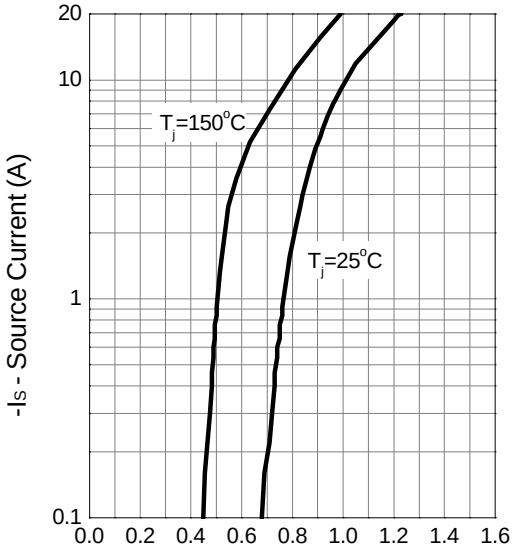


Typical Operating Characteristics (Cont.)

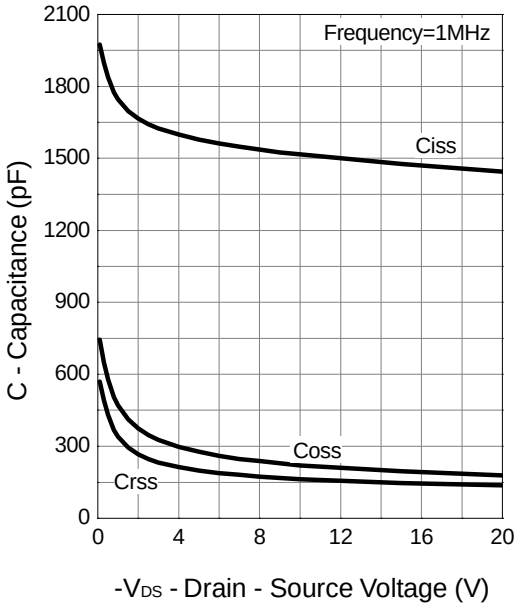
Drain-Source On Resistance



Source-Drain Diode Forward



Capacitance



Gate Charge