

Dynamic Characteristics

APT20M45BVR(G)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0V$		4050	4860	pF
C_{oss}	Output Capacitance	$V_{DS} = 25V$		980	1375	
C_{rss}	Reverse Transfer Capacitance	$f = 1MHz$		300	450	
Q_g	Total Gate Charge ¹	$V_{GS} = 10V$		130	195	nC
Q_{ge}	Gate-Source Charge	$V_{DD} = 0.5V_{DSS}$		30	45	
Q_{gd}	Gate- Drain ("Miller") Charge	$I_D = I_{D(cont.)} @ 25^\circ C$		55	80	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 10V$		12	24	ns
t_r	Rise Time	$V_{DD} = 0.5V_{DSS}$		14	28	
$t_{d(off)}$	Turn-off Delay Time	$I_D = I_{D(cont.)} @ 25^\circ C$		43	70	
t_f	Fall Time	$R_G = 1.6\Omega$		7	14	

Source-Drain Diode Ratings and Characteristics

Symbol	Characteristic / Test Conditions	Min	Typ	Max	Unit
I_S	Continuous Source Current (Body Diode)			56	Amps
I_{SM}	Pulse Source Current ¹ (Body Diode)			224	
V_{SD}	Diode Forward Voltage ² ($V_{GS} = 0V$, $I_S = -I_{D(cont.)}$)			1.3	Volts
t_{rr}	Reverse Recovery Time ($I_S = -I_{D(cont.)}$, $dI_S/dt = 100A/\mu s$)		280		nS
Q_{rr}	Reverse Recovery Time ($I_S = -I_{D(cont.)}$, $dI_S/dt = 100A/\mu s$)		3.5		μC

Thermal Characteristics

Symbol	Characteristic	Min	Typ	Max	Unit
$R_{\theta JC}$	Junction to Case			0.42	$^\circ C/W$
$R_{\theta JA}$	Junction to Ambient			40	

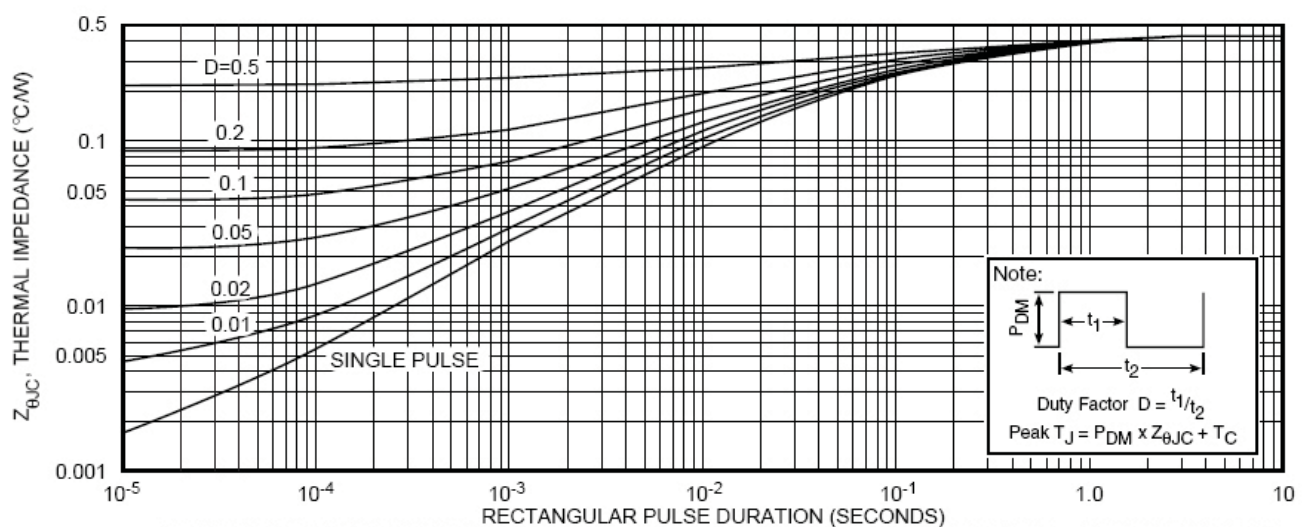
- ① Repetitive Rating: Pulse width limited by maximum junction temperature.

- ③ See MIL-STD-750 Method 3471

- ② Pulse Test: Pulse width < 380 μs , Duty Cycle < 2%

- ④ Starting $T_J = +25^\circ C$, $L = 830\mu H$, $R_G = 25\Omega$, Peak $I_L = 56A$

Microsemi Reserves the right to change, without notice, the specifications and information contained herein.



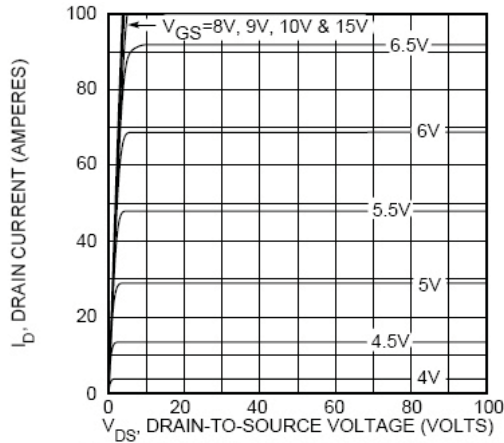


FIGURE 2, TYPICAL OUTPUT CHARACTERISTICS

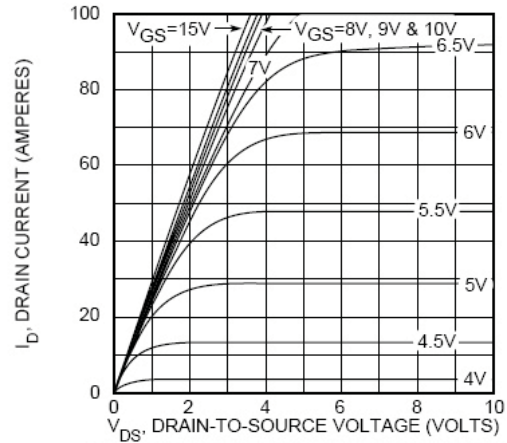


FIGURE 3, TYPICAL OUTPUT CHARACTERISTICS

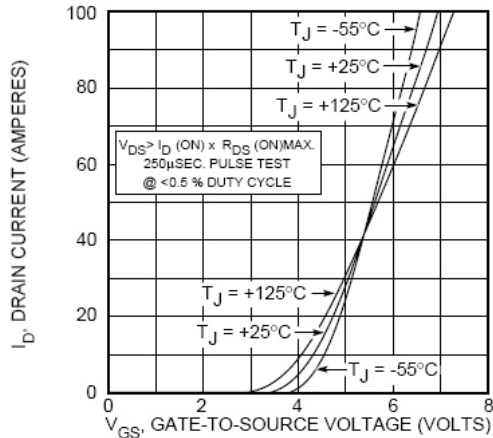


FIGURE 4, TYPICAL TRANSFER CHARACTERISTICS

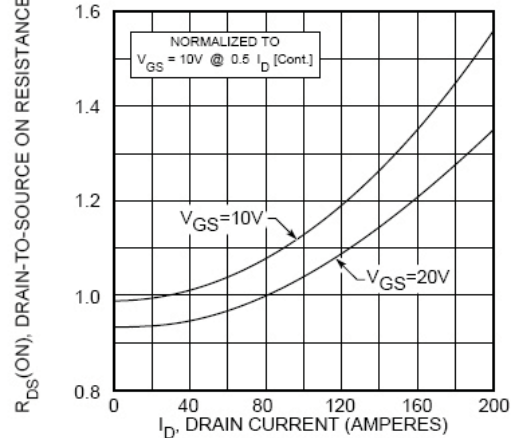


FIGURE 5, $R_{DS(ON)}$ vs DRAIN CURRENT

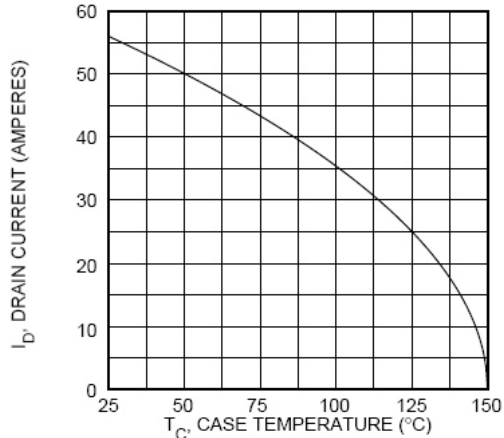


FIGURE 6, MAXIMUM DRAIN CURRENT vs CASE TEMPERATURE

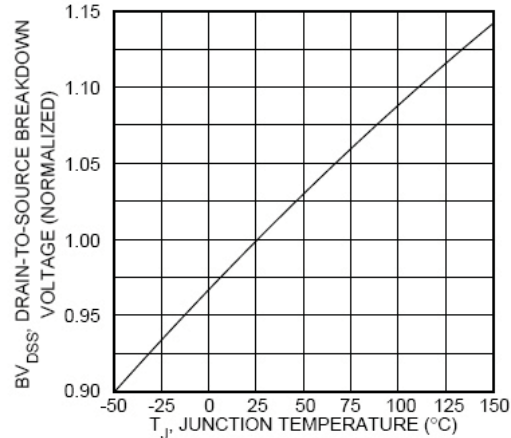


FIGURE 7, BREAKDOWN VOLTAGE vs TEMPERATURE

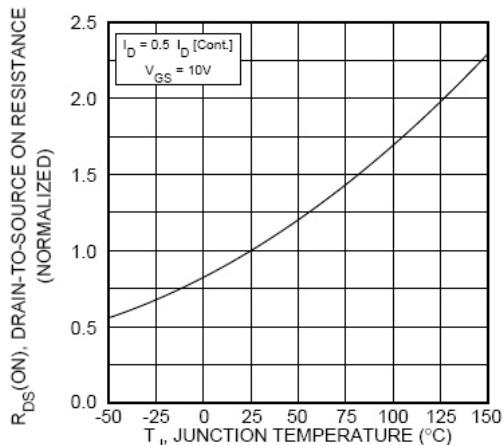


FIGURE 8, ON-RESISTANCE vs. TEMPERATURE

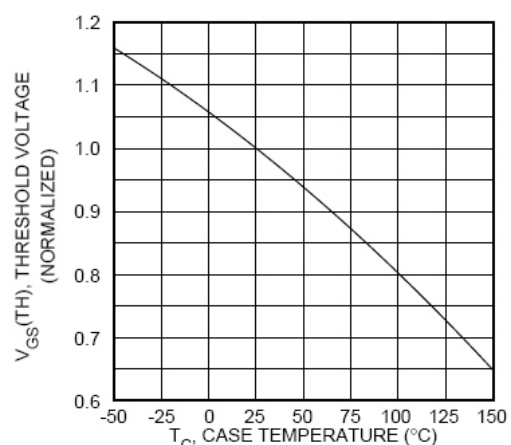


FIGURE 9, THRESHOLD VOLTAGE vs TEMPERATURE

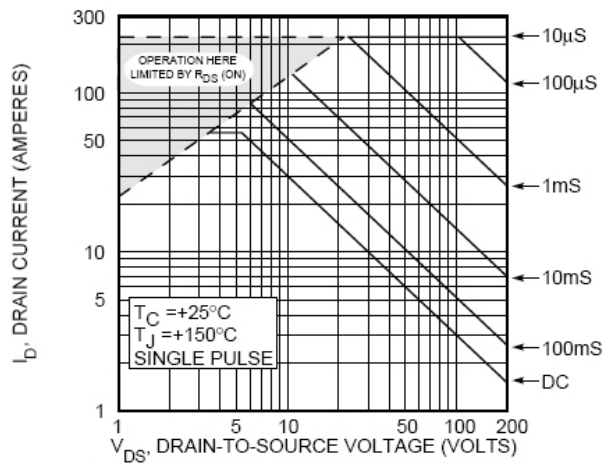


FIGURE 10, MAXIMUM SAFE OPERATING AREA

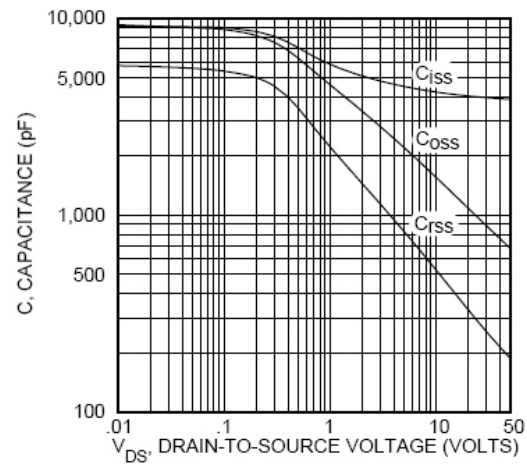


FIGURE 11, TYPICAL CAPACITANCE vs DRAIN-TO-SOURCE VOLTAGE

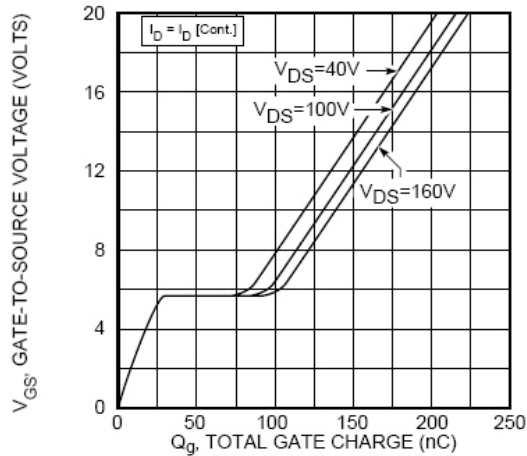


FIGURE 12, GATE CHARGES vs GATE-TO-SOURCE VOLTAGE

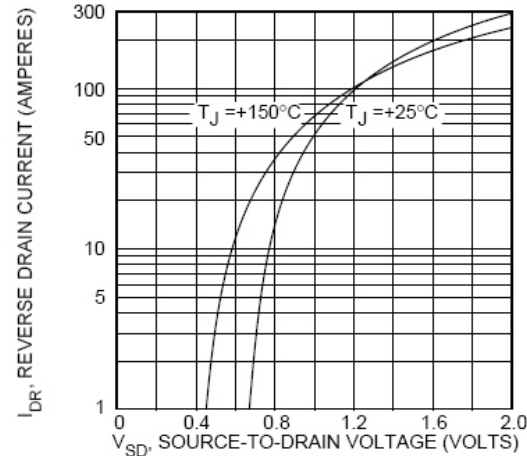


FIGURE 13, TYPICAL SOURCE-DRAIN DIODE FORWARD VOLTAGE

TO-247 (B) Package Outline

e3 100% Sn Plated

