

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	

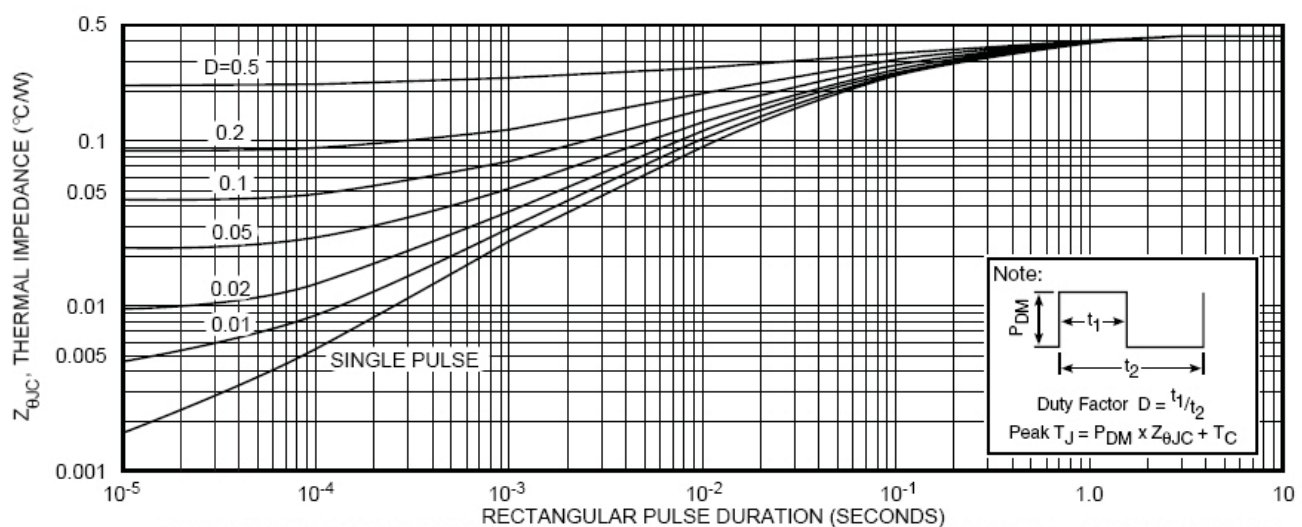
① Repetitive Rating: Pulse width limited by maximum junction temperature.

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

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

③ See MIL-STD-750 Method 3471

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



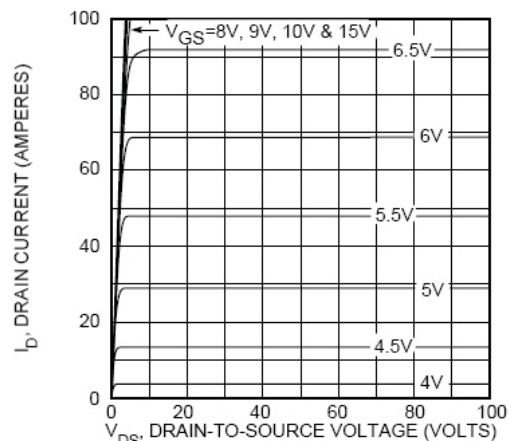


FIGURE 2, TYPICAL OUTPUT CHARACTERISTICS

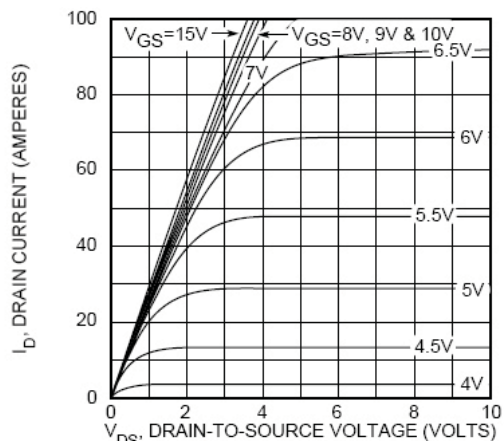


FIGURE 3, TYPICAL OUTPUT CHARACTERISTICS

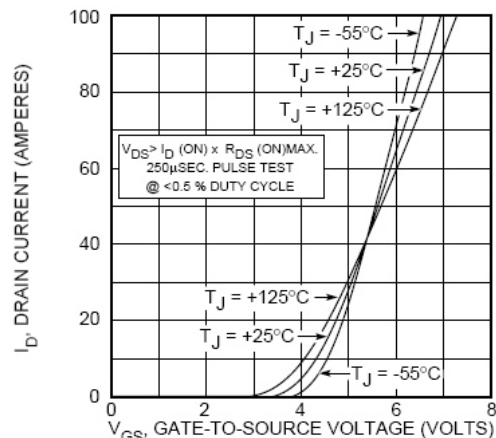


FIGURE 4, TYPICAL TRANSFER CHARACTERISTICS

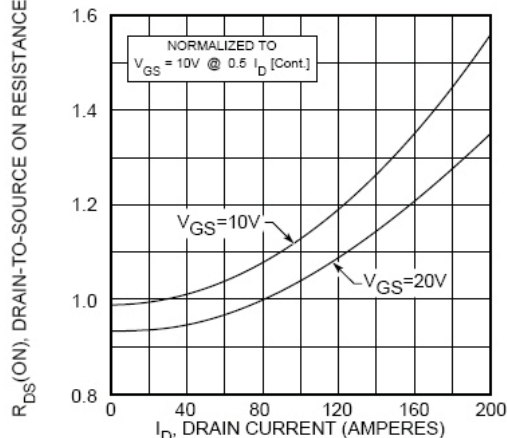


FIGURE 5, $R_{DS(ON)}$ vs DRAIN CURRENT

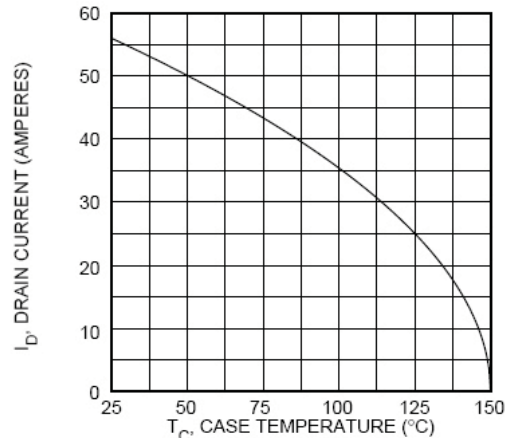


FIGURE 6, MAXIMUM DRAIN CURRENT vs CASE TEMPERATURE

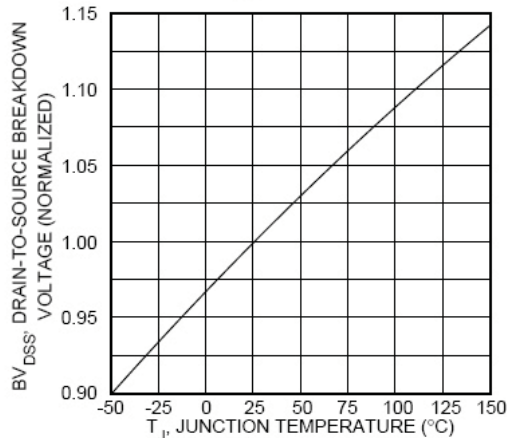


FIGURE 7, BREAKDOWN VOLTAGE vs TEMPERATURE

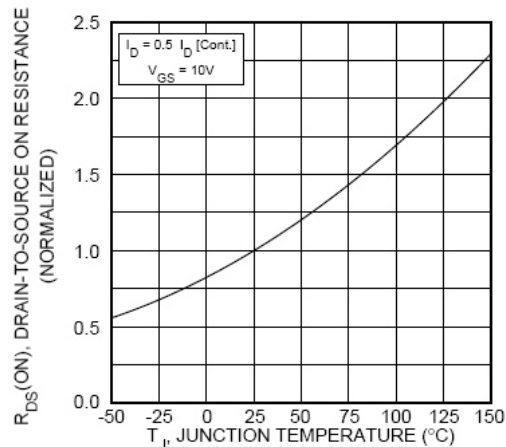


FIGURE 8, ON-RESISTANCE vs. TEMPERATURE

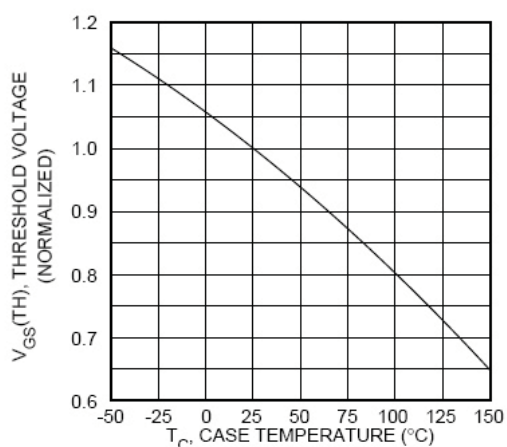


FIGURE 9, THRESHOLD VOLTAGE vs TEMPERATURE

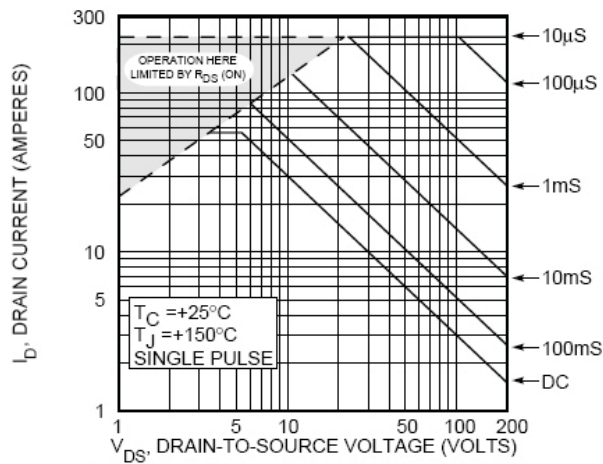


FIGURE 10, MAXIMUM SAFE OPERATING AREA

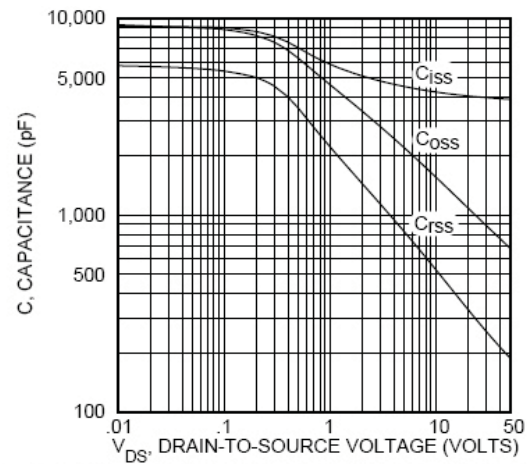


FIGURE 11, TYPICAL CAPACITANCE vs DRAIN-TO-SOURCE VOLTAGE

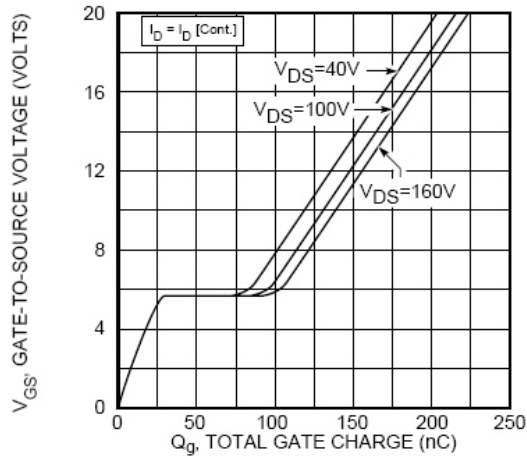


FIGURE 12, GATE CHARGES vs GATE-TO-SOURCE VOLTAGE

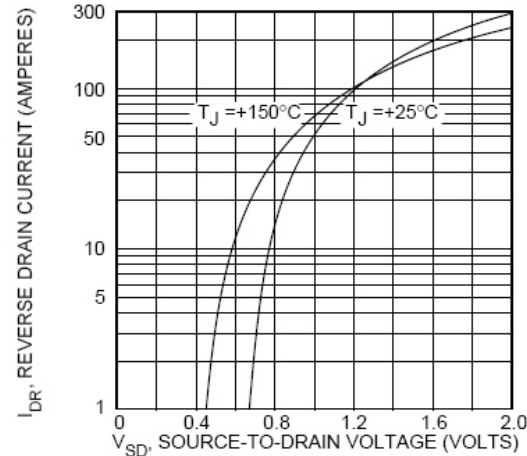


FIGURE 13, TYPICAL SOURCE-DRAIN DIODE FORWARD VOLTAGE

TO-247 (B) Package Outline

e3 100% Sn Plated

