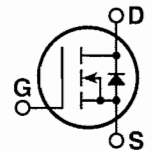
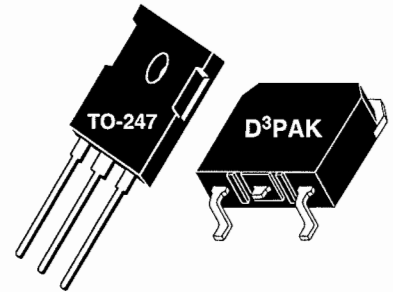


POWER MOS V®

Power MOS V® is a new generation of high voltage N-Channel enhancement mode power MOSFETs. This new technology minimizes the JFET effect, increases packing density and reduces the on-resistance. Power MOS V® also achieves faster switching speeds through optimized gate layout.



- **Faster Switching**
- **Lower Leakage**
- **100% Avalanche Tested**
- **TO-247 or Surface Mount**
- **Surface Mount D³PAK Package**

MAXIMUM RATINGS

All Ratings: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Parameter	APT1201R6BVR/SVR	UNIT
V_{DSS}	Drain-Source Voltage	1200	Volts
I_D	Continuous Drain Current @ $T_C = 25^\circ\text{C}$	8	Amps
I_{DM}	Pulsed Drain Current ^①	32	
V_{GS}	Gate-Source Voltage Continuous	± 30	Volts
V_{GSM}	Gate-Source Voltage Transient	± 40	
P_D	Total Power Dissipation @ $T_C = 25^\circ\text{C}$	280	Watts
	Linear Derating Factor	2.24	W/°C
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	°C
T_L	Lead Temperature: 0.063" from Case for 10 Sec.	300	
I_{AR}	Avalanche Current ^① (Repetitive and Non-Repetitive)	8	Amps
E_{AR}	Repetitive Avalanche Energy ^①	30	mJ
E_{AS}	Single Pulse Avalanche Energy ^④	1210	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV_{DSS}	Drain-Source Breakdown Voltage ($V_{GS} = 0V, I_D = 250\mu A$)	1200			Volts
$I_{D(on)}$	On State Drain Current ^② ($V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max, $V_{GS} = 10V$)	10			Amps
$R_{DS(on)}$	Drain-Source On-State Resistance ^② ($V_{GS} = 10V, 0.5 I_{D(Cont.)}$)			1.600	Ohms
I_{DSS}	Zero Gate Voltage Drain Current ($V_{DS} = V_{DSS}, V_{GS} = 0V$)			25	μA
	Zero Gate Voltage Drain Current ($V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V, T_C = 125^\circ\text{C}$)			250	
I_{GSS}	Gate-Source Leakage Current ($V_{GS} = \pm 30V, V_{DS} = 0V$)			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1.0mA$)	2		4	Volts



CAUTION: These Devices are Sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

DYNAMIC CHARACTERISTICS

APT1201R6BVR/SVR

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{ MHz}$		3050	3660	pF
C_{oss}	Output Capacitance			255	360	
C_{rss}	Reverse Transfer Capacitance			125	190	
Q_g	Total Gate Charge ③	$V_{GS} = 10V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_{D[Cont.]} @ 25^\circ C$		155	230	nC
Q_{gs}	Gate-Source Charge			15	23	
Q_{gd}	Gate-Drain ("Miller") Charge			78	115	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_{D[Cont.]} @ 25^\circ C$ $R_G = 1.6\Omega$		12	24	ns
t_r	Rise Time			10	20	
$t_{d(off)}$	Turn-off Delay Time			50	75	
t_f	Fall Time			15	30	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I_S	Continuous Source Current (Body Diode)			8	Amps
I_{SM}	Pulsed Source Current ① (Body Diode)			32	
V_{SD}	Diode Forward Voltage ② ($V_{GS} = 0V$, $I_S = -I_{D[Cont.]}$)			1.3	Volts
t_{rr}	Reverse Recovery Time ($I_S = -I_{D[Cont.]}$, $dI_S/dt = 100A/\mu s$)		500		ns
Q_{rr}	Reverse Recovery Charge ($I_S = -I_{D[Cont.]}$, $dI_S/dt = 100A/\mu s$)		7		μC

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.45	$^\circ C/W$
$R_{\theta JA}$	Junction to Ambient			40	

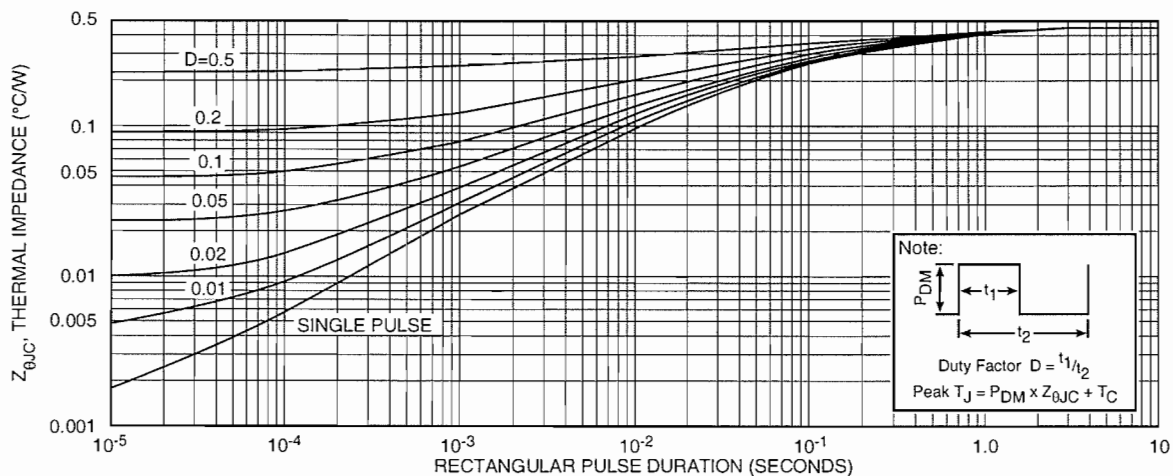
① Repetitive Rating: Pulse width limited by maximum junction temperature.

③ See MIL-STD-750 Method 3471

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

④ Starting $T_J = +25^\circ C$, $L = 37.81mH$, $R_G = 25\Omega$, Peak $I_L = 8A$

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



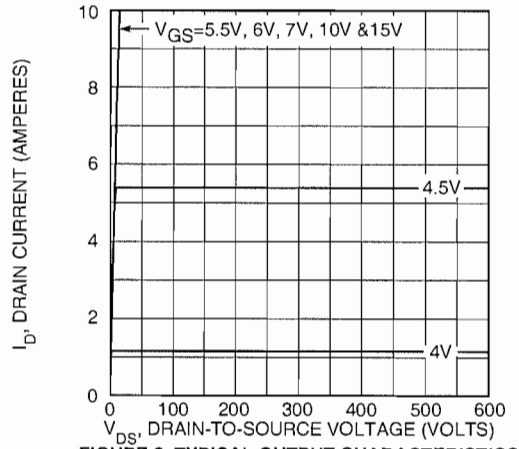


FIGURE 2, TYPICAL OUTPUT CHARACTERISTICS

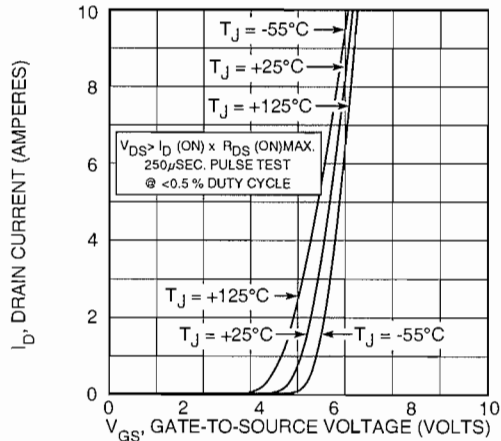


FIGURE 4, TYPICAL TRANSFER CHARACTERISTICS

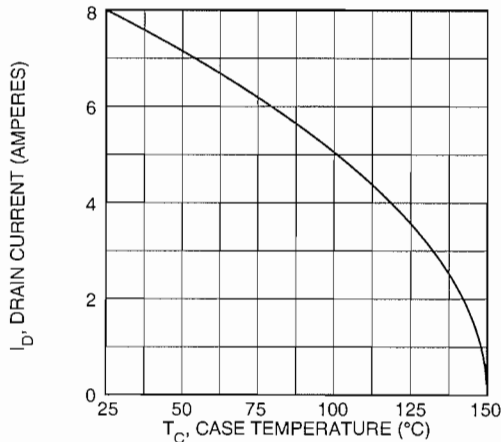


FIGURE 6, MAXIMUM DRAIN CURRENT vs CASE TEMPERATURE

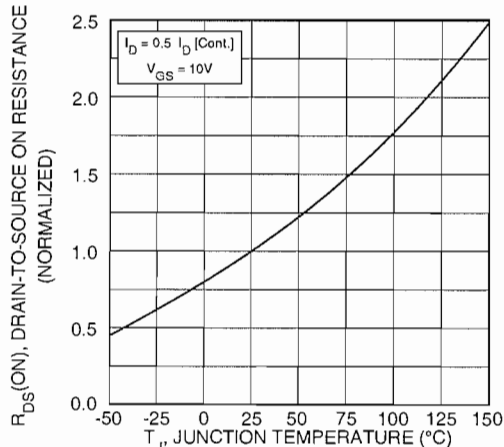


FIGURE 8, ON-RESISTANCE vs. TEMPERATURE

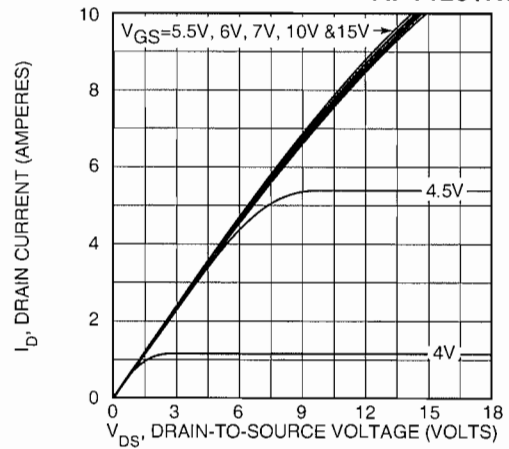


FIGURE 3, TYPICAL OUTPUT CHARACTERISTICS

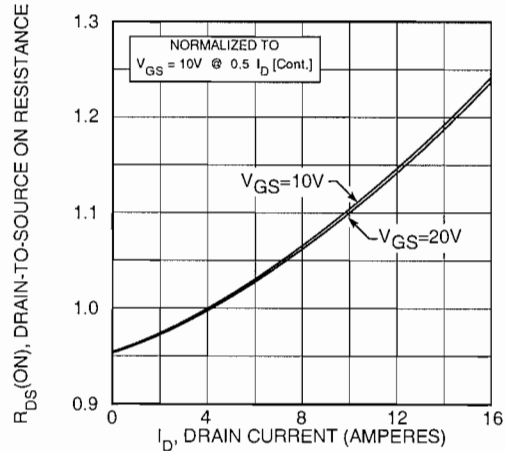


FIGURE 5, $R_{DS(ON)}$ vs DRAIN CURRENT

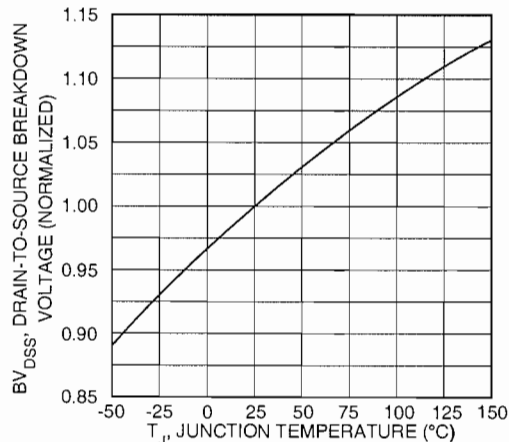


FIGURE 7, BREAKDOWN VOLTAGE vs TEMPERATURE

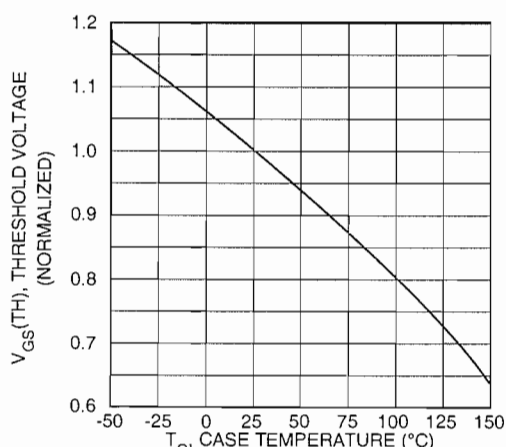


FIGURE 9, THRESHOLD VOLTAGE vs TEMPERATURE

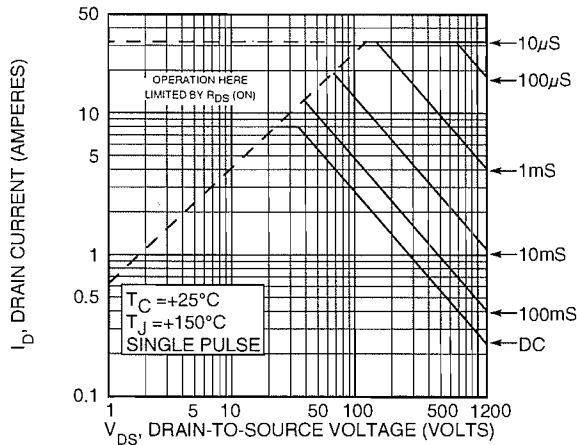


FIGURE 10, MAXIMUM SAFE OPERATING AREA

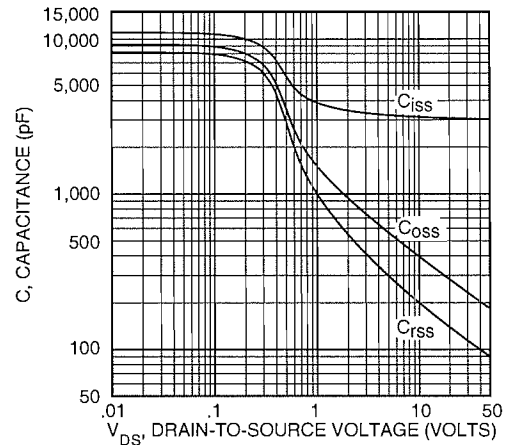


FIGURE 11, TYPICAL CAPACITANCE vs DRAIN-TO-SOURCE VOLTAGE

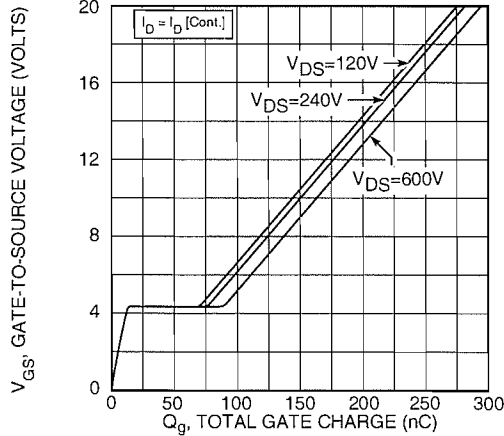


FIGURE 12, GATE CHARGES vs GATE-TO-SOURCE VOLTAGE

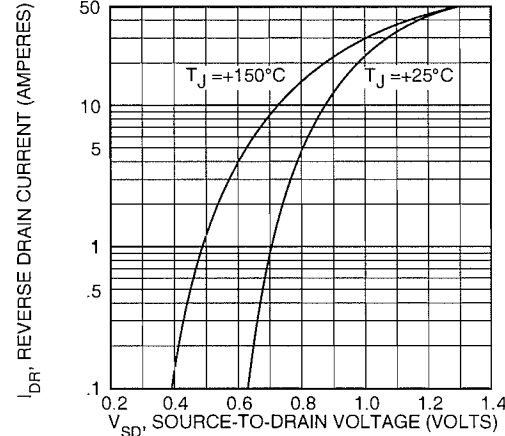
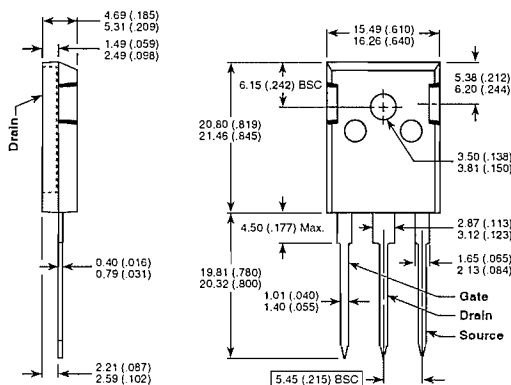


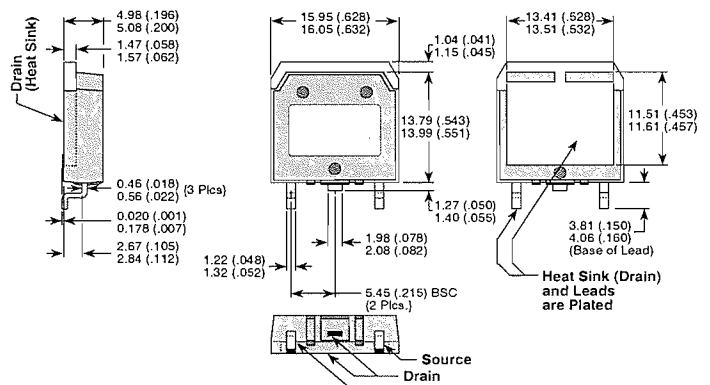
FIGURE 13, TYPICAL SOURCE-DRAIN DIODE FORWARD VOLTAGE

TO-247 Package Outline



Dimensions in Millimeters and (Inches)

D³PAK Package Outline



Dimensions in Millimeters and (Inches)

APT's devices are covered by one or more of the following U.S. patents: 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336
5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058