

DYNAMIC CHARACTERISTICS

APT94N60L2C3(G)

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{ MHz}$		13600		pF
C_{oss}	Output Capacitance			4400		
C_{rss}	Reverse Transfer Capacitance			290		
Q_g	Total Gate Charge ⁵	$V_{GS} = 10V$ $V_{DD} = 300V$ $I_D = 94A @ 25^\circ C$		505	640	nC
Q_{gs}	Gate-Source Charge			48		
Q_{gd}	Gate-Drain ("Miller") Charge			240		
$t_{d(on)}$	Turn-on Delay Time	INDUCTIVE SWITCHING $V_{GS} = 13V$ $V_{DD} = 380V$ $I_D = 94A @ 125^\circ C$ $R_G = 0.9\Omega$		18		ns
t_r	Rise Time			27		
$t_{d(off)}$	Turn-off Delay Time			110	165	
t_f	Fall Time			8	12	
E_{on}	Turn-on Switching Energy ⁶	INDUCTIVE SWITCHING @ 25°C $V_{DD} = 400V, V_{GS} = 15V$ $I_D = 94A, R_G = 5\Omega$		2040		μJ
E_{off}	Turn-off Switching Energy			3515		
E_{on}	Turn-on Switching Energy ⁶	INDUCTIVE SWITCHING @ 125°C $V_{DD} = 400V, V_{GS} = 15V$ $I_D = 94A, R_G = 5\Omega$		2920		
E_{off}	Turn-off Switching Energy			3970		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I_S	Continuous Source Current (Body Diode)			94	Amps
I_{SM}	Pulsed Source Current ² (Body Diode)			282	
V_{SD}	Diode Forward Voltage ⁴ ($V_{GS} = 0V, I_S = -94A$)		1	1.2	Volts
dv/dt	Peak Diode Recovery $^{dv/dt}$ ⁷			6	V/ns
t_{rr}	Reverse Recovery Time ($I_S = -94A, di/dt = 100A/\mu s$)		861		ns
Q_{rr}	Reverse Recovery Charge ($I_S = -94A, di/dt = 100A/\mu s$)		46		μC

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.15	$^\circ C/W$
$R_{\theta JA}$	Junction to Ambient			62	

- Continuous current limited by package lead temperature.
- Repetitive Rating: Pulse width limited by maximum junction temperature
- Repetitive avalanche causes additional power losses that can be calculated as $P_{AV} = E_{AR} \cdot f$. Pulse width tp limited by Tj max.
- Pulse Test: Pulse width < 380 μs , Duty Cycle < 2%
- See MIL-STD-750 Method 3471
- Eon includes diode reverse recovery.
- Maximum 125°C diode commutation speed = di/dt 600A/ μs

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

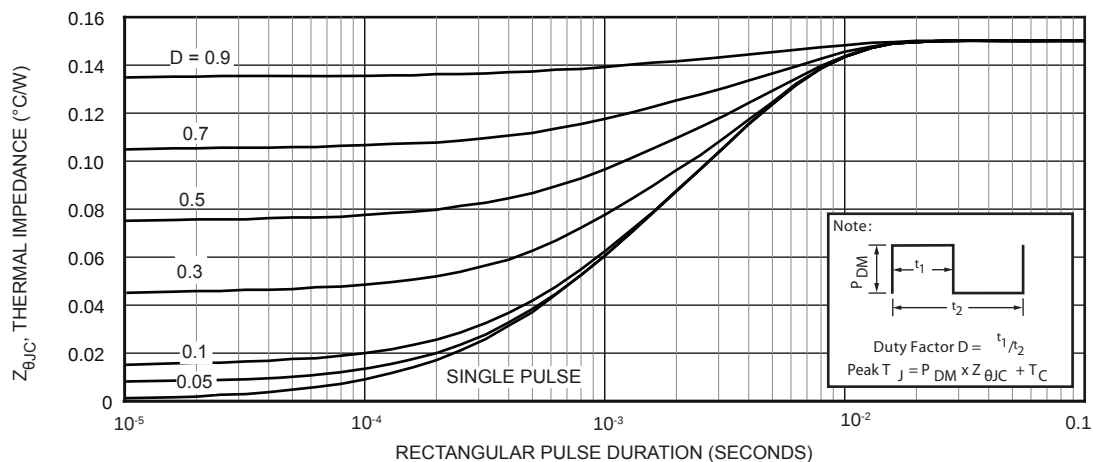


Figure 1, Maximum Effective Transient Thermal Impedance, Junction-To-Case vs Pulse Duration

Typical Performance Curves

APT94N60L2C3(G)

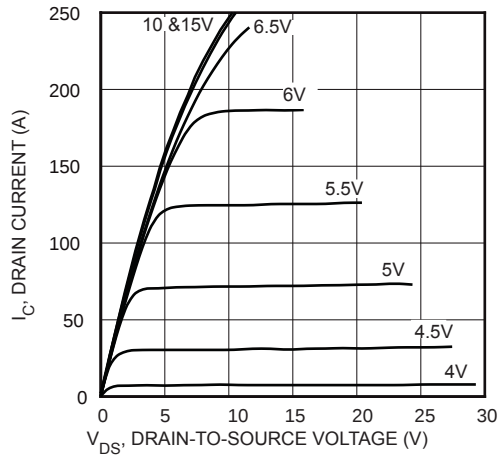


FIGURE 2, Low Voltage Output Characteristics

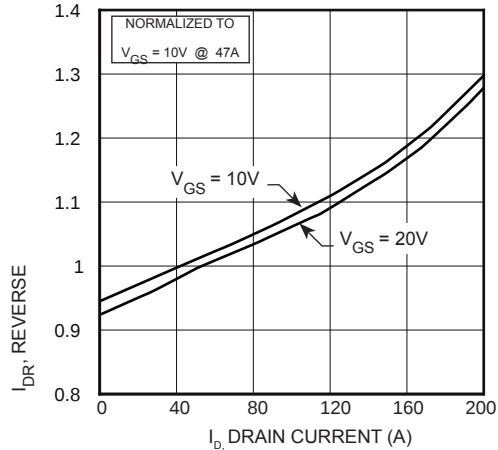


FIGURE 4, $R_{DS(ON)}$ vs Drain Current

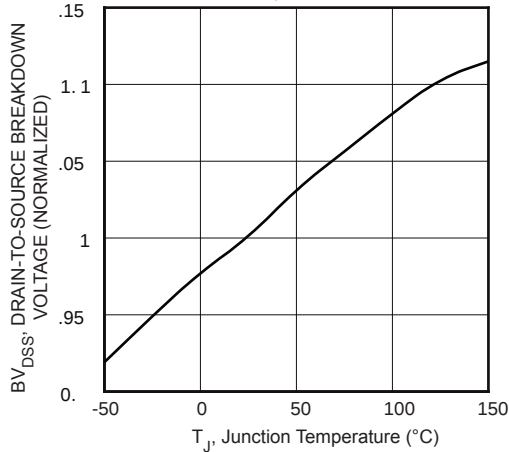


FIGURE 6, Breakdown Voltage vs Temperature

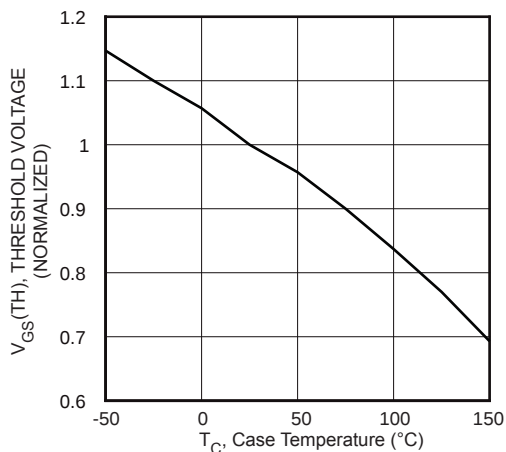


FIGURE 8, Threshold Voltage vs Temperature

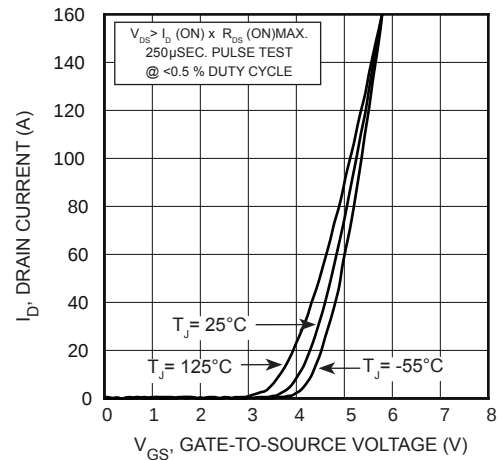


FIGURE 3, Transfer Characteristics

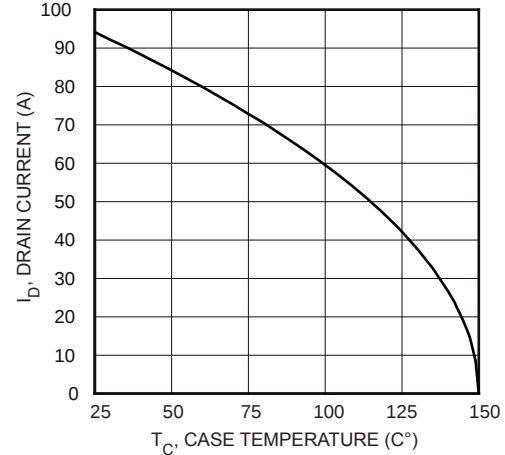


FIGURE 5, Maximum Drain Current vs Case Temperature

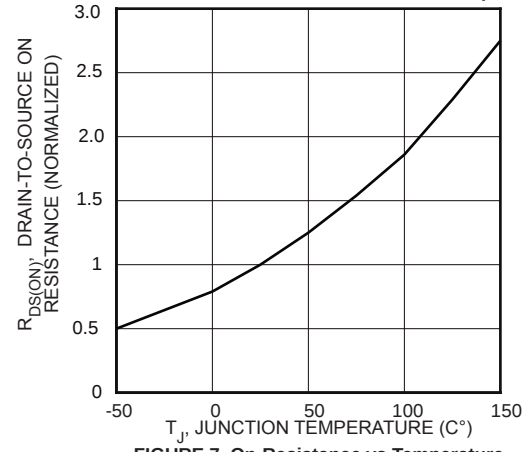


FIGURE 7, On-Resistance vs Temperature

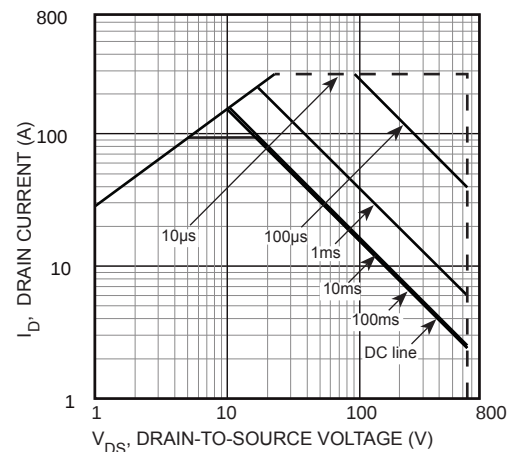


FIGURE 9, Maximum Safe Operating Area

Typical Performance Curves

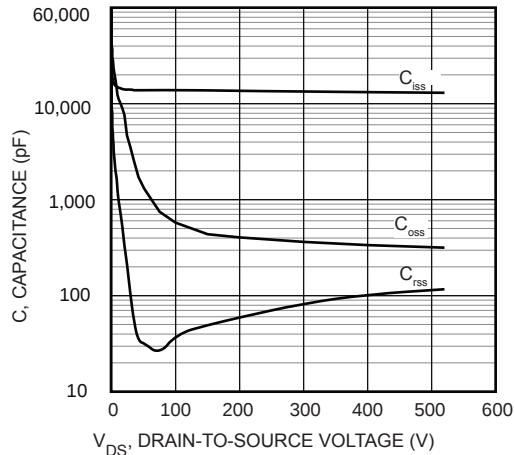


FIGURE 10, Capacitance vs Drain-To-Source Voltage

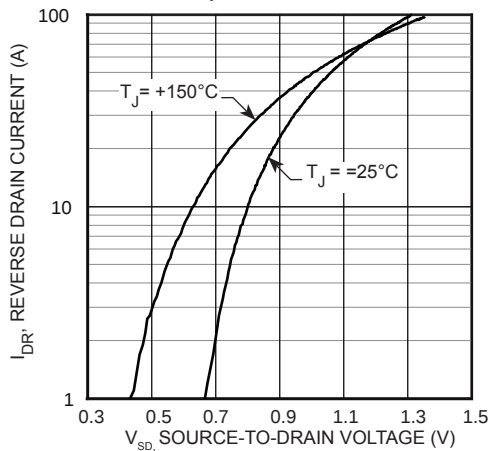


FIGURE 12, Source-Drain Diode Forward Voltage

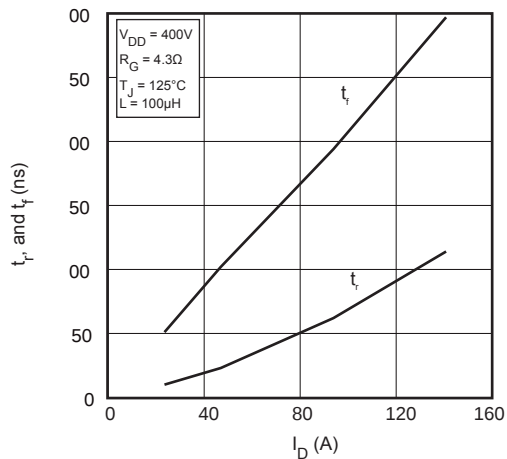


FIGURE 14, Rise and Fall Times vs Current

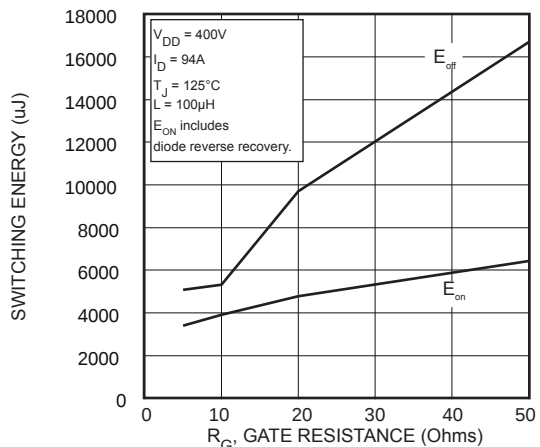


FIGURE 16, Switching Energy vs Gate Resistance

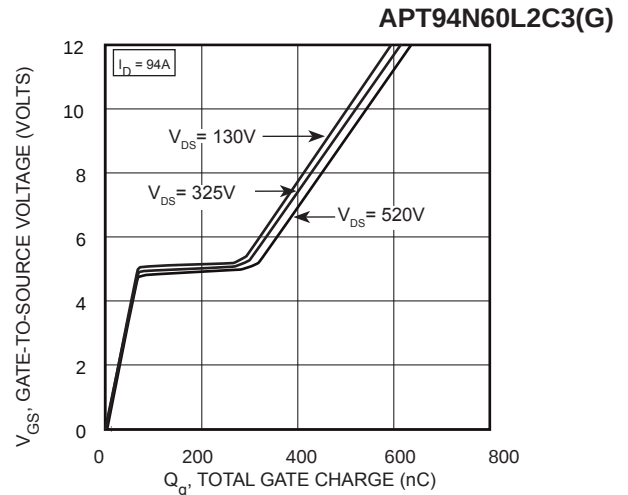


FIGURE 11, Gate Charges vs Gate-To-Source Voltage

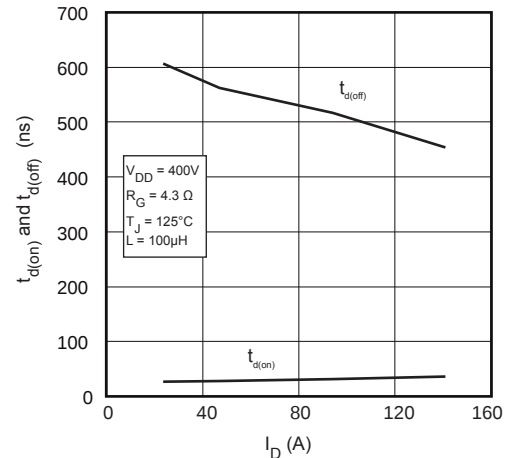


FIGURE 13, Delay Times vs Current

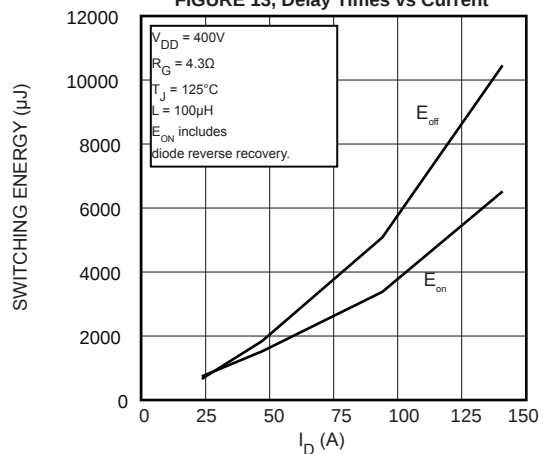


FIGURE 15, Switching Energy vs Current

Typical Performance Curves

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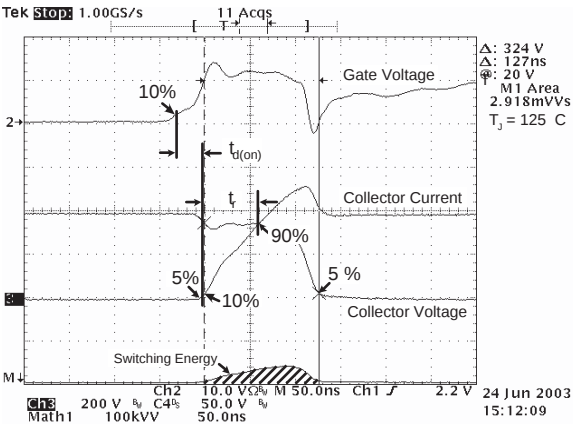


Figure 17, Turn-on Switching Waveforms and Definitions

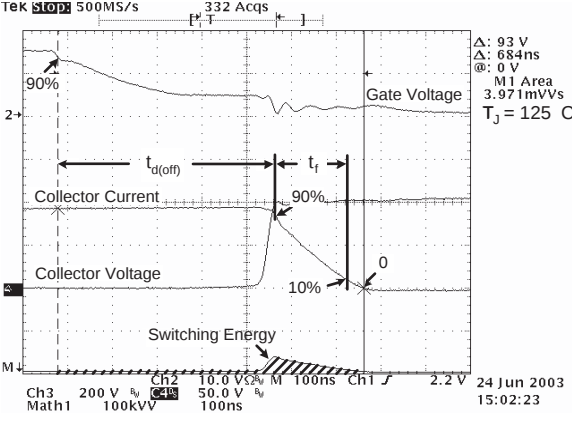


Figure 18, Turn-off Switching Waveforms and Definitions

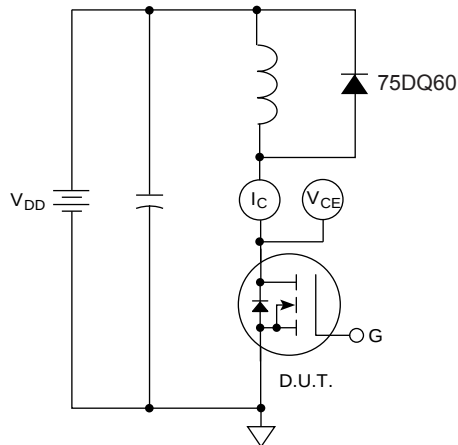
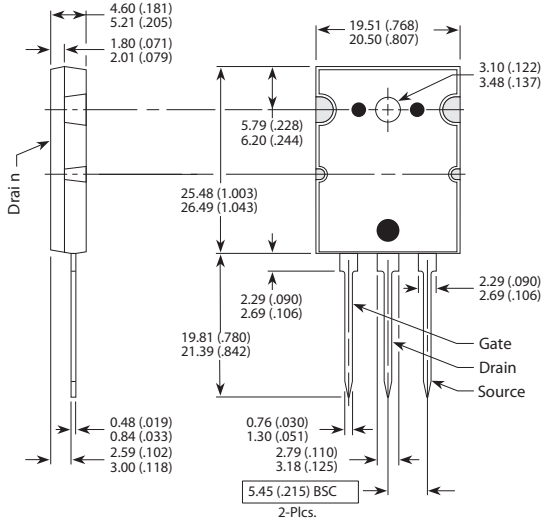


Figure 19, Inductive Switching Test Circuit

TO-264 (L) Package Outline

Ⓔ3100% Sn Plated



Dimensions in Millimeters and (Inches)