

Static Characteristics

$T_J = 25^\circ\text{C}$ unless otherwise specified

APT34M60B_S

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{BR(DSS)}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	600			V
$\Delta V_{BR(DSS)}/\Delta T_J$	Breakdown Voltage Temperature Coefficient	Reference to $25^\circ\text{C}, I_D = 250\mu A$		0.57		V/ $^\circ\text{C}$
$R_{DS(on)}$	Drain-Source On Resistance ^③	$V_{GS} = 10V, I_D = 17A$		0.15	0.19	Ω
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{GS} = V_{DS}, I_D = 1mA$	3	4	5	V
$\Delta V_{GS(th)}/\Delta T_J$	Threshold Voltage Temperature Coefficient			-10		mV/ $^\circ\text{C}$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 600V, T_J = 25^\circ\text{C}$ $V_{GS} = 0V, T_J = 125^\circ\text{C}$			100	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 30V$			500	nA

Dynamic Characteristics

$T_J = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
g_{fs}	Forward Transconductance	$V_{DS} = 50V, I_D = 17A$		32		S
C_{iss}	Input Capacitance	$V_{GS} = 0V, V_{DS} = 25V$ $f = 1MHz$		6640		pF
C_{rss}	Reverse Transfer Capacitance			70		
C_{oss}	Output Capacitance			610		
$C_{o(cr)}^{④}$	Effective Output Capacitance, Charge Related	$V_{GS} = 0V, V_{DS} = 0V \text{ to } 400V$		325		
$C_{o(er)}^{⑤}$	Effective Output Capacitance, Energy Related			170		
Q_g	Total Gate Charge	$V_{GS} = 0 \text{ to } 10V, I_D = 17A,$ $V_{DS} = 300V$		165		nC
Q_{gs}	Gate-Source Charge			36		
Q_{gd}	Gate-Drain Charge			70		
$t_{d(on)}$	Turn-On Delay Time	Resistive Switching $V_{DD} = 400V, I_D = 17A$ $R_G = 4.7\Omega^{⑥}, V_{GG} = 15V$		37		ns
t_r	Current Rise Time			43		
$t_{d(off)}$	Turn-Off Delay Time			115		
t_f	Current Fall Time			34		

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_S	Continuous Source Current (Body Diode)	MOSFET symbol showing the integral reverse p-n junction diode (body diode)			36	A
I_{SM}	Pulsed Source Current (Body Diode) ^①				124	
V_{SD}	Diode Forward Voltage	$I_{SD} = 17A, T_J = 25^\circ\text{C}, V_{GS} = 0V$			1	V
t_{rr}	Reverse Recovery Time	$I_{SD} = 17A^{②}$ $di_{SD}/dt = 100A/\mu s, T_J = 25^\circ\text{C}$		570		ns
Q_{rr}	Reverse Recovery Charge			11.8		μC
dv/dt	Peak Recovery dv/dt	$I_{SD} \leq 17A, di/dt \leq 1000A/\mu s, V_{DD} = 400V,$ $T_J = 125^\circ\text{C}$			8	V/ns

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

② Starting at $T_J = 25^\circ\text{C}, L = 6.44mH, R_G = 4.7\Omega, I_{AS} = 17A$.

③ Pulse test: Pulse Width < 380 μs , duty cycle < 2%.

④ $C_{o(cr)}$ is defined as a fixed capacitance with the same stored charge as C_{OSS} with $V_{DS} = 67\%$ of $V_{(BR)DSS}$.

⑤ $C_{o(er)}$ is defined as a fixed capacitance with the same stored energy as C_{OSS} with $V_{DS} = 67\%$ of $V_{(BR)DSS}$. To calculate $C_{o(er)}$ for any value of V_{DS} less than $V_{(BR)DSS}$, use this equation: $C_{o(er)} = -8.03E-8/V_{DS}^2 + 2.80E-8/V_{DS} + 9.89E-11$.

⑥ R_G is external gate resistance, not including internal gate resistance or gate driver impedance. (MIC4452)

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

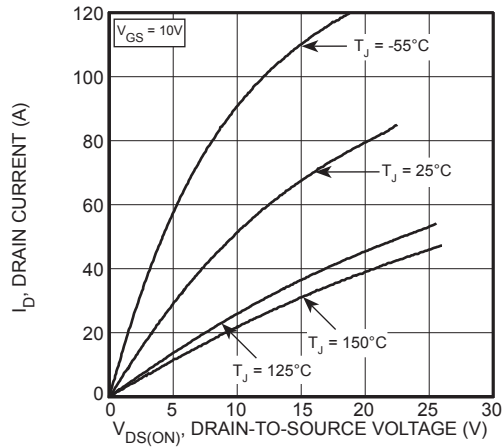


Figure 1, Output Characteristics

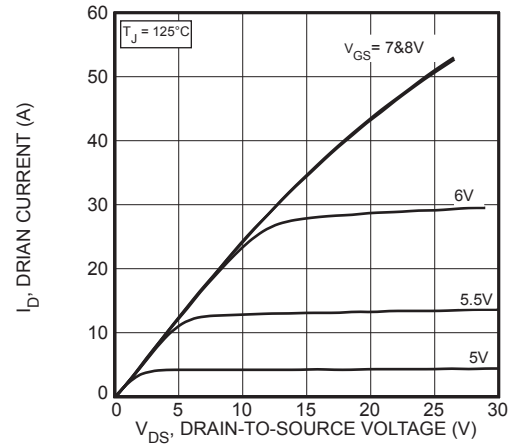


Figure 2, Output Characteristics

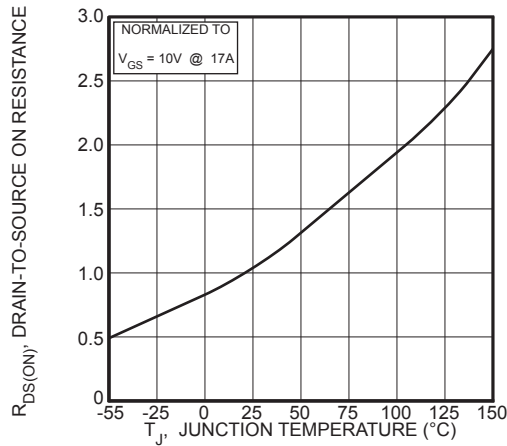
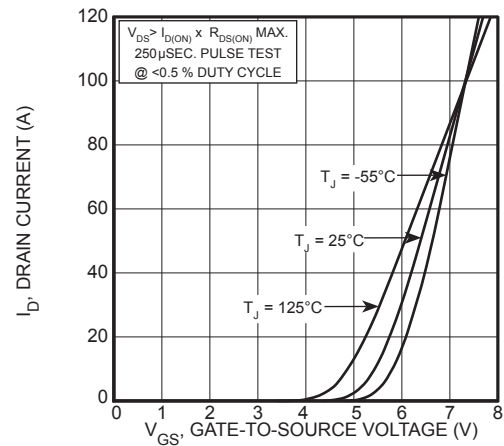
Figure 3, $R_{DS(ON)}$ vs Junction Temperature

Figure 4, Transfer Characteristics

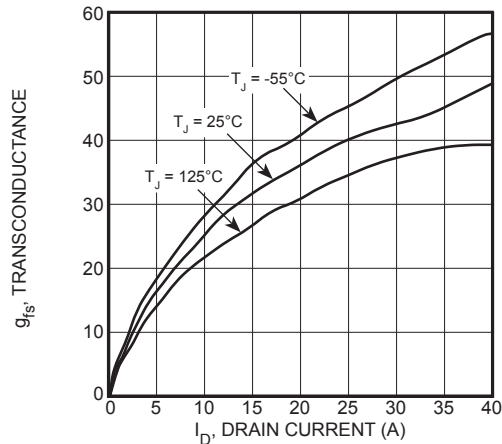


Figure 5, Gain vs Drain Current

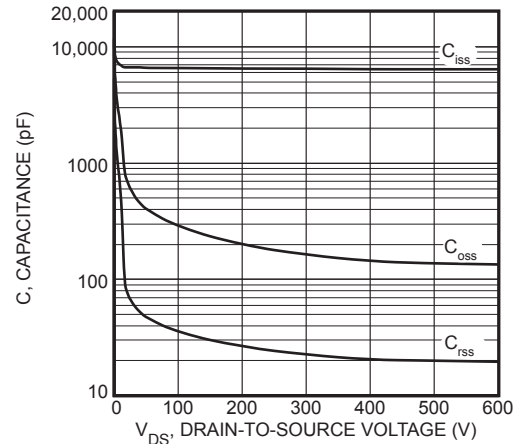


Figure 6, Capacitance vs Drain-to-Source Voltage

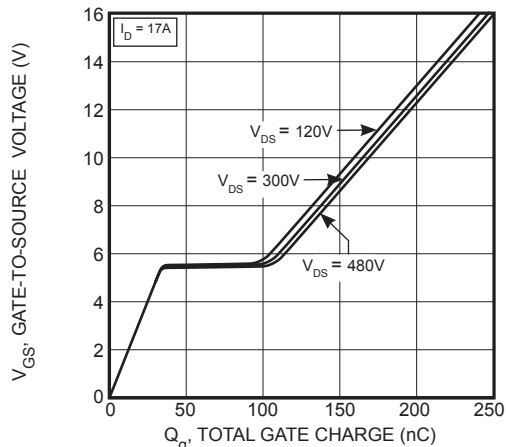


Figure 7, Gate Charge vs Gate-to-Source Voltage

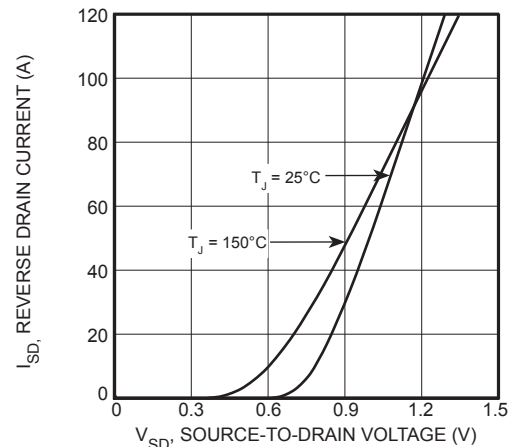
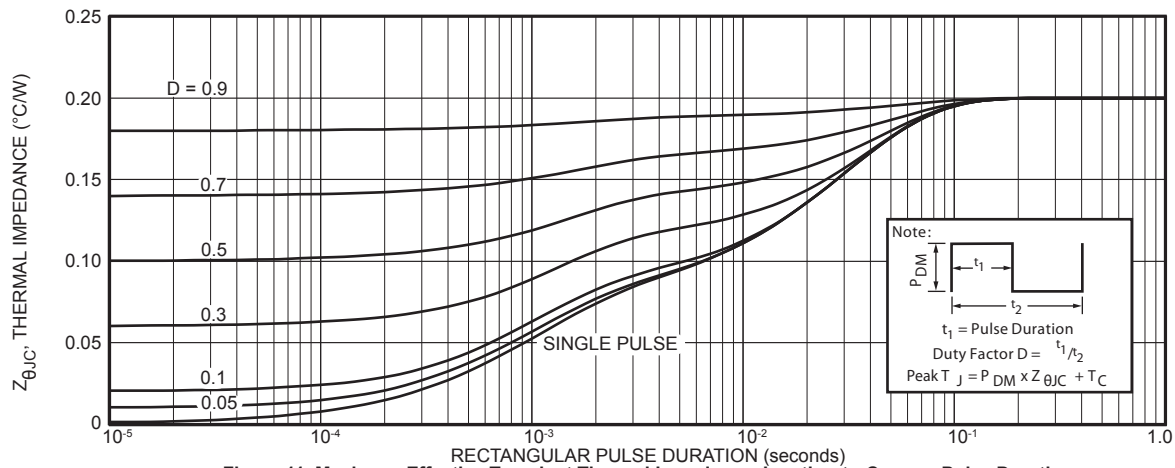
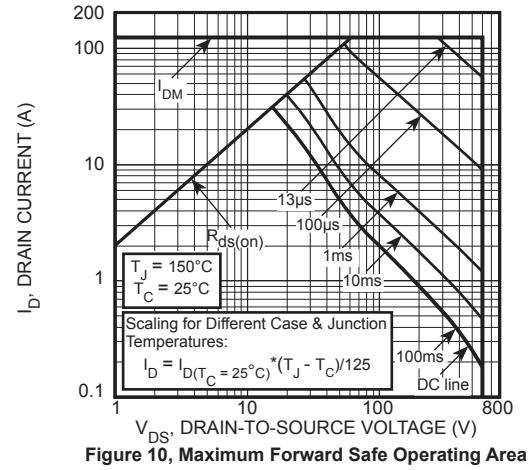
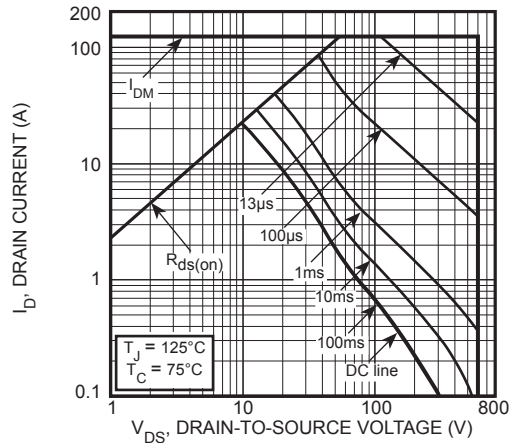
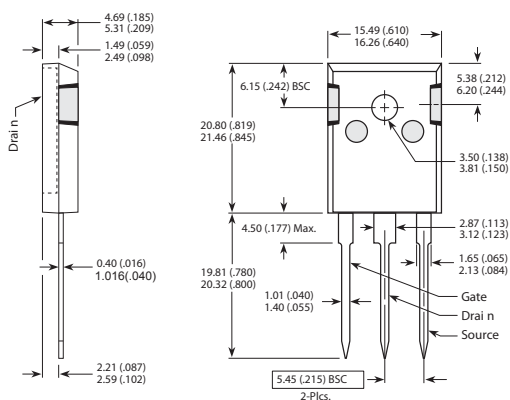


Figure 8, Reverse Drain Current vs Source-to-Drain Voltage



TO-247 (B) Package Outline

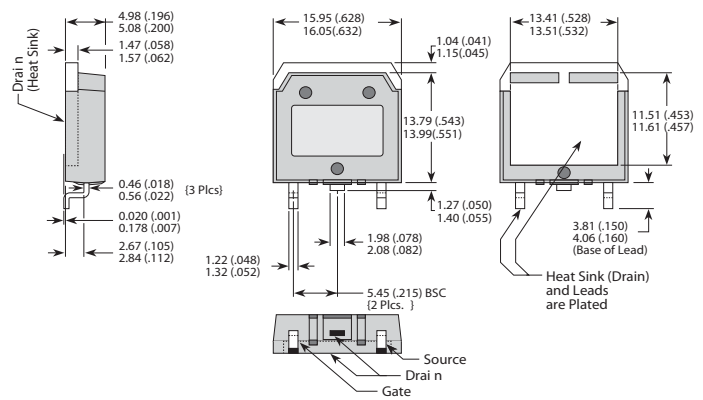
② SAC: Tin, Silver, Copper



Dimensions in Millimeters (Inches)

D³PAK Package Outline

③ 100% Sn Plated



Dimensions in Millimeters (Inches)