

Static Characteristics

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

APT24M120B2 L

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{BR(DSS)}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	1200			V
$\Delta V_{BR(DSS)}/\Delta T_J$	Breakdown Voltage Temperature Coefficient	Reference to $25^\circ\text{C}, I_D = 250\mu A$		1.41		V/ $^\circ\text{C}$
$R_{DS(on)}$	Drain-Source On Resistance ^③	$V_{GS} = 10V, I_D = 12A$		0.50	0.63	Ω
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{GS} = V_{DS}, I_D = 2.5mA$	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	$V_{DS} = 1200V, T_J = 25^\circ\text{C}$ $V_{GS} = 0V, T_J = 125^\circ\text{C}$			100	μA
					500	
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 30V$			± 100	nA

Dynamic Characteristics

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
g_{fs}	Forward Transconductance	$V_{DS} = 50V, I_D = 12A$		27		S
C_{iss}	Input Capacitance	$V_{GS} = 0V, V_{DS} = 25V$ $f = 1MHz$		8370		pF
C_{rss}	Reverse Transfer Capacitance			100		
C_{oss}	Output Capacitance			615		
$C_{o(cr)}^{④}$	Effective Output Capacitance, Charge Related	$V_{GS} = 0V, V_{DS} = 0V \text{ to } 800V$		240		
$C_{o(er)}^{⑤}$	Effective Output Capacitance, Energy Related			125		
Q_g	Total Gate Charge	$V_{GS} = 0 \text{ to } 10V, I_D = 12A,$ $V_{DS} = 600V$		260		nC
Q_{gs}	Gate-Source Charge			42		
Q_{gd}	Gate-Drain Charge			120		
$t_{d(on)}$	Turn-On Delay Time	Resistive Switching $V_{DD} = 800V, I_D = 12A$ $R_G = 2.2\Omega^{⑥}, V_{GG} = 15V$		45		ns
t_r	Current Rise Time			27		
$t_{d(off)}$	Turn-Off Delay Time			145		
t_f	Current Fall Time			42		

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)			24	A
I_{SM}	Pulsed Source Current (Body Diode) ^①				90	
V_{SD}	Diode Forward Voltage	$I_{SD} = 12A, T_J = 25^\circ\text{C}, V_{GS} = 0V$			1	V
t_{rr}	Reverse Recovery Time	$I_{SD} = 12A^{②}$ $di_{SD}/dt = 100A/\mu s, T_J = 25^\circ\text{C}$		1270		ns
Q_{rr}	Reverse Recovery Charge			30		μC
dv/dt	Peak Recovery dv/dt	$I_{SD} \leq 12A, di/dt \leq 1000A/\mu s, V_{DD} = 800V,$ $T_J = 125^\circ\text{C}$			10	V/ns

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

② Starting at $T_J = 25^\circ\text{C}, L = 26.04mH, R_G = 2.2\Omega, I_{AS} = 12A$.

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: $C_{o(er)} = -3.80E-7/V_{DS}^2 + 4.62E-8/V_{DS} + 6.57E-11$.

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.

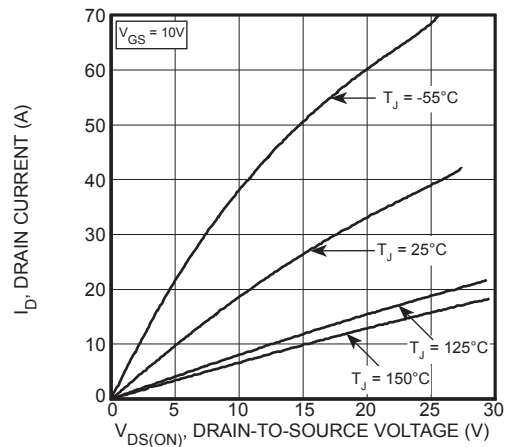


Figure 1, Output Characteristics

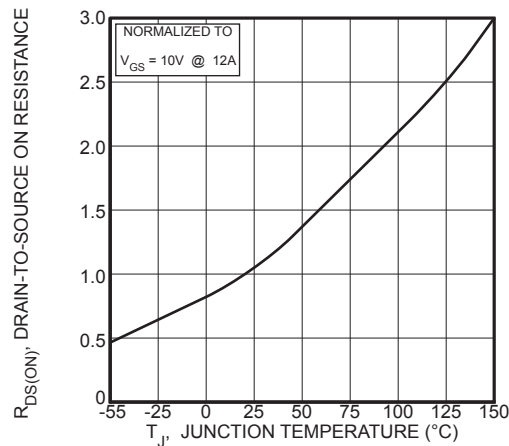
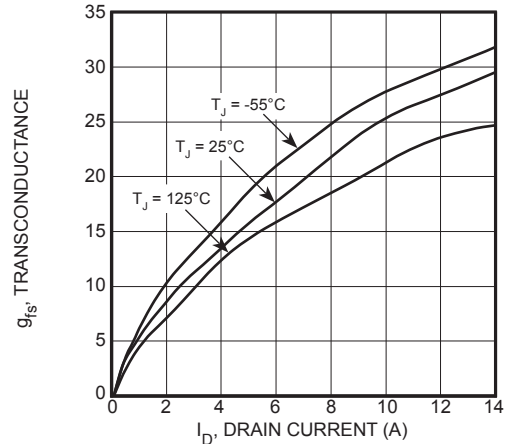
Figure 3, $R_{DS(ON)}$ vs Junction Temperature

Figure 5, Gain vs Drain Current

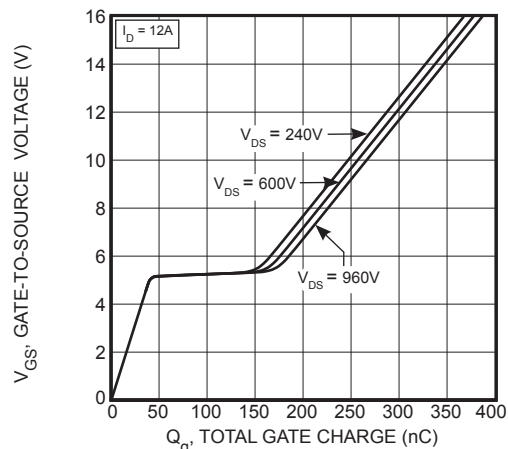


Figure 7, Gate Charge vs Gate-to-Source Voltage

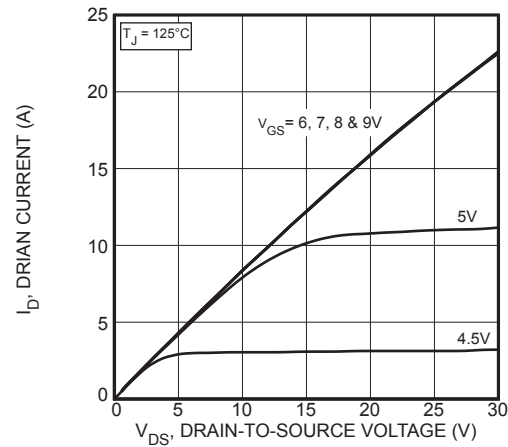


Figure 2, Output Characteristics

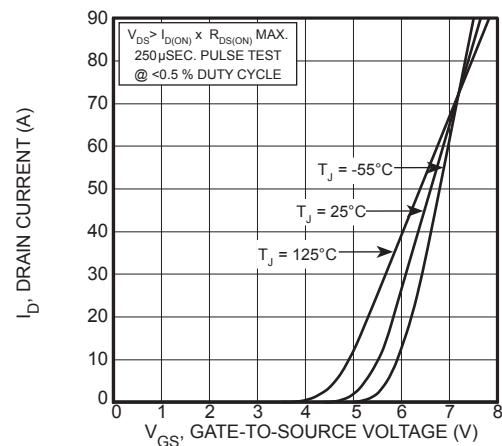


Figure 4, Transfer Characteristics

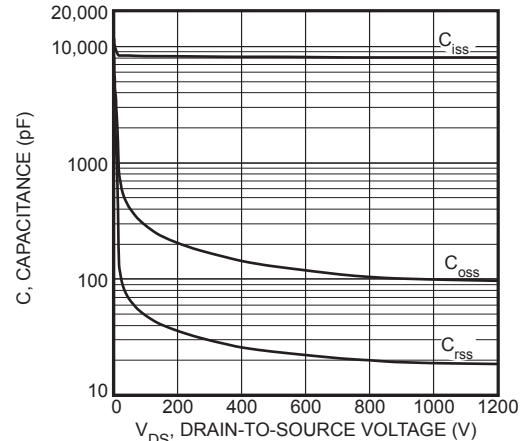


Figure 6, Capacitance vs Drain-to-Source Voltage

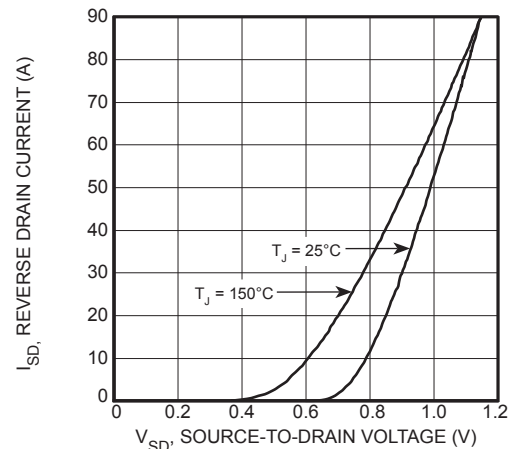
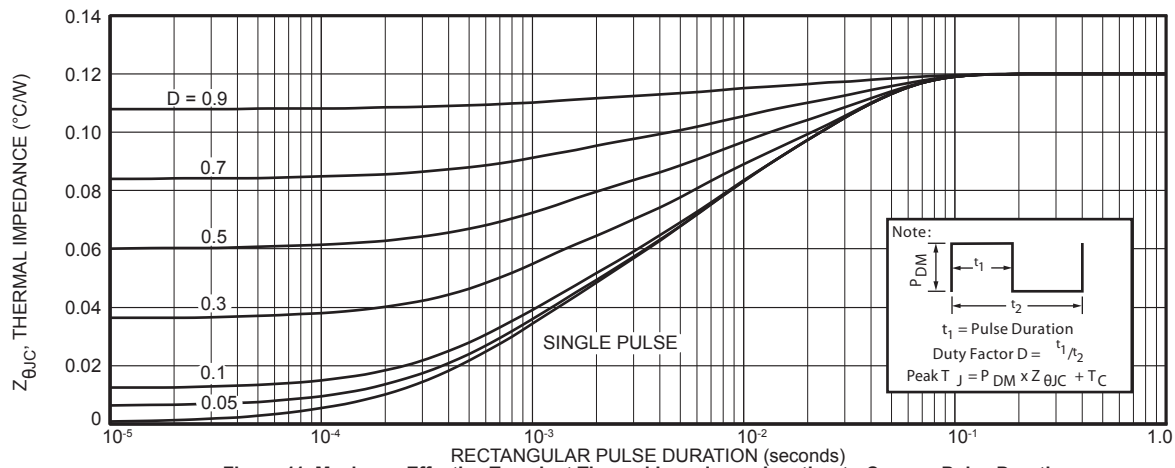
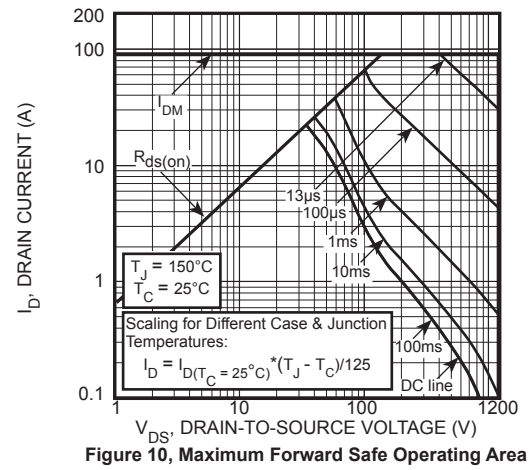
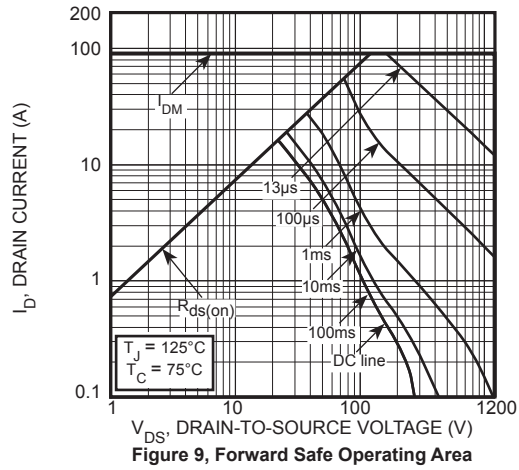
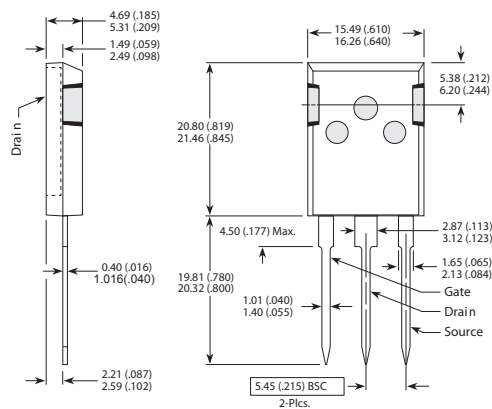


Figure 8, Reverse Drain Current vs Source-to-Drain Voltage



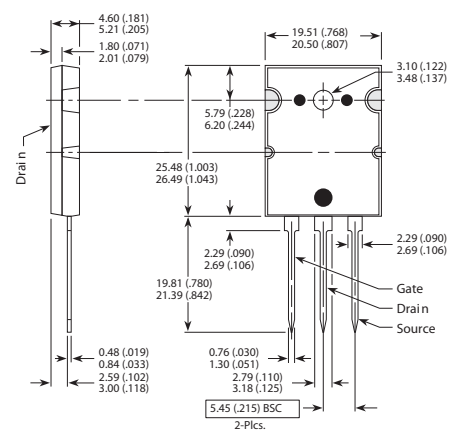
T-MAX™ (B2) Package Outline

Ⓔ 100% Sn Plated



Dimensions in Millimeters (Inches)

TO-264 (L) Package Outline



Dimensions in Millimeters (Inches)