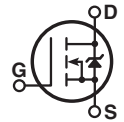
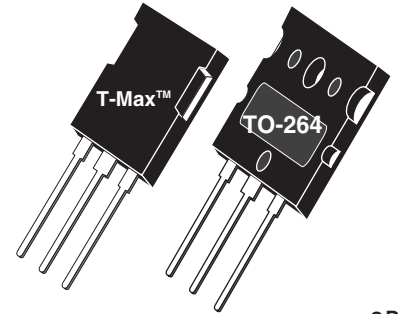


LINEAR MOSFET

Linear Mosfets are optimized for applications operating in the Linear region where concurrent high voltage and high current can occur at near DC conditions (>100 msec).



- Higher FBSOA
- Popular T-MAX™ or TO-264 Package
- Higher Power Dissipation

MAXIMUM RATINGS

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

Symbol	Parameter	APL502B2_L (G)	UNIT
V_{DSS}	Drain-Source Voltage	500	Volts
I_D	Continuous Drain Current @ $T_C = 25^\circ\text{C}$	58	Amps
I_{DM}	Pulsed Drain Current ^①	232	
V_{GS}	Gate-Source Voltage Continuous	±30	Volts
V_{GSM}	Gate-Source Voltage Transient	±40	
P_D	Total Power Dissipation @ $T_C = 25^\circ\text{C}$	730	Watts
	Linear Derating Factor	5.84	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)	58	Amps
E_{AR}	Repetitive Avalanche Energy ^①	50	mJ
E_{AS}	Single Pulse Avalanche Energy ^④	3000	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions / Part Number	MIN	TYP	MAX	UNIT
BV_{DSS}	Drain-Source Breakdown Voltage ($V_{GS} = 0V, I_D = 250 \mu A$)	500			Volts
$I_{D(ON)}$	On State Drain Current ^② ($V_{DS} > I_{D(ON)} \times R_{DS(ON)} \text{ Max}, V_{GS} = 12V$)	58			Amps
$R_{DS(ON)}$	Drain-Source On-State Resistance ^② ($V_{GS} = 12V, 29A$)			0.09	Ohms
I_{DSS}	Zero Gate Voltage Drain Current ($V_{DS} = 500V, V_{GS} = 0V$)			25	μA
	Zero Gate Voltage Drain Current ($V_{DS} = 400V, V_{GS} = 0V, T_C = 125^\circ\text{C}$)			250	
I_{GSS}	Gate-Source Leakage Current ($V_{GS} = \pm 30V, V_{DS} = 0V$)			±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 2.5mA$)	2		4	Volts

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

DYNAMIC CHARACTERISTICS

APL502B2_L(G)

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1 \text{ MHz}$		7485	9000	pF
C_{oss}	Output Capacitance			1290	1810	
C_{rss}	Reverse Transfer Capacitance			617	930	
$t_d(\text{on})$	Turn-on Delay Time	$V_{GS} = 15V$ $V_{DD} = 250V$ $I_D = 29A @ 25^\circ C$ $R_G = 0.6W$		13	26	ns
t_r	Rise Time			27	54	
$t_d(\text{off})$	Turn-off Delay Time			56	84	
t_f	Fall Time			16	20	

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
R_{qJC}	Junction to Case			.17	$^\circ C/W$
W_T	Package Weight		0.22		oz
			5.9		g

- ① Repetitive Rating: Pulse width limited by maximum junction temperature.
- ② Pulse Test: Pulse width < 380 μS , Duty Cycle < 2%
- ③ See MIL-STD-750 Method 3471
- ④ Starting $T_j = +25^\circ C$, $L = 1.78mH$, $R_G = 25W$, Peak $I_L = 58A$
- Microsemi reserves the right to change, without notice, the specifications and information contained herein.

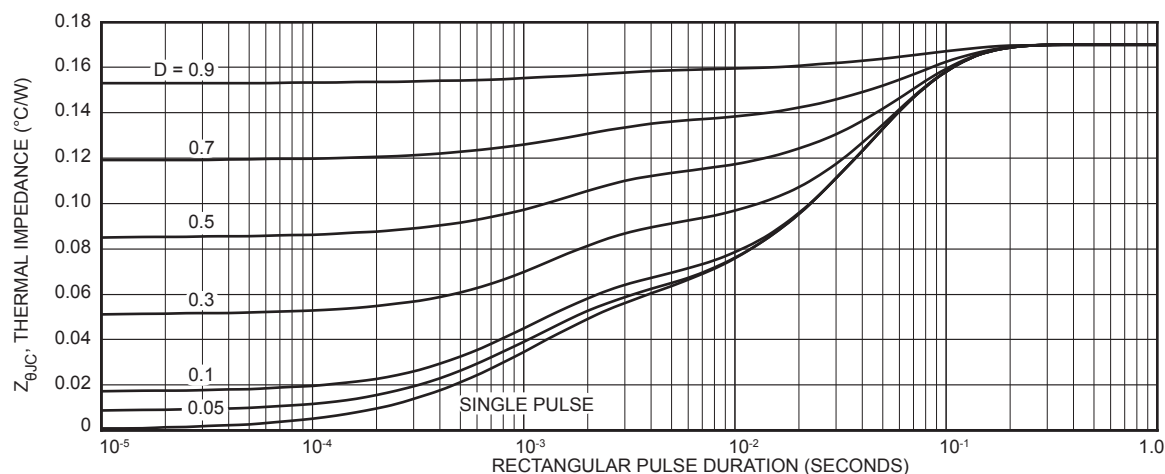


FIGURE 1, MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs PULSE DURATION

Typical Performance Curves

APL502B2_L(G)

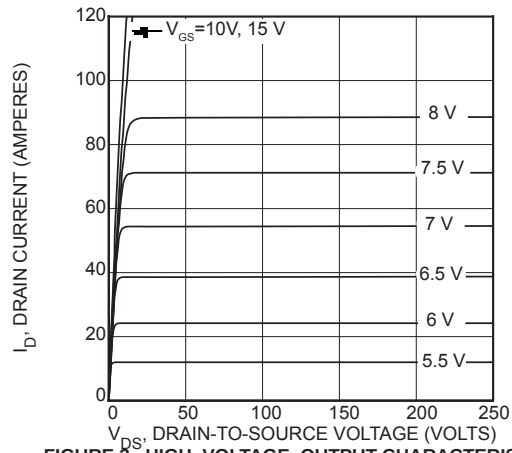


FIGURE 2, HIGH VOLTAGE OUTPUT CHARACTERISTICS

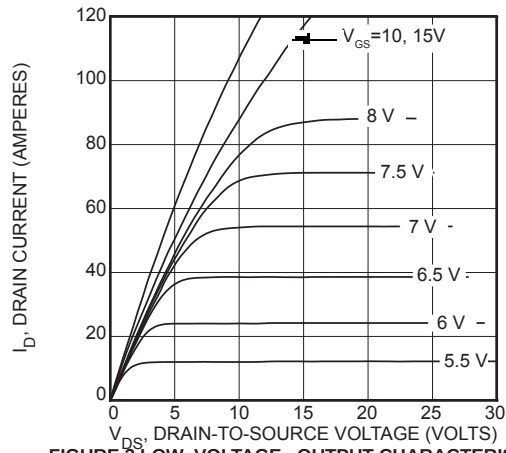


FIGURE 3, LOW VOLTAGE OUTPUT CHARACTERISTICS

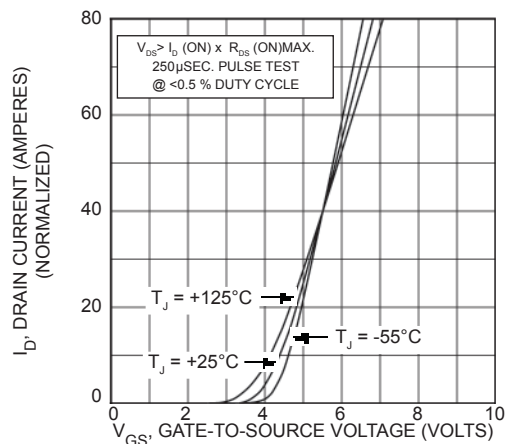


FIGURE 4, TRANSFER CHARACTERISTICS

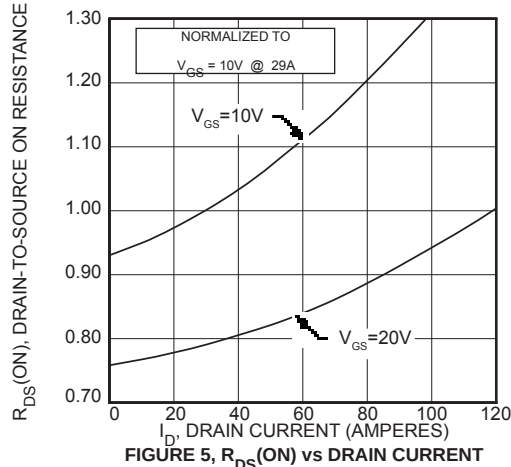


FIGURE 5, $R_{DS(ON)}$ vs DRAIN CURRENT

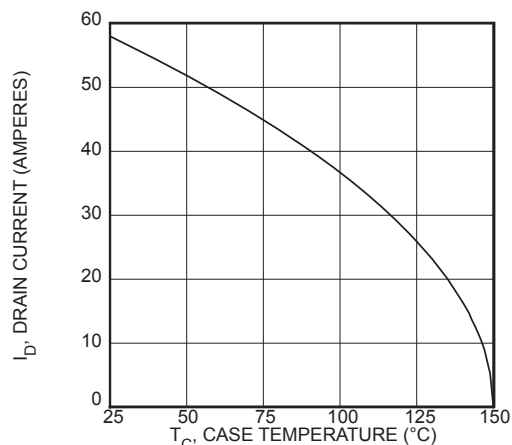


FIGURE 6, MAXIMUM DRAIN CURRENT vs CASE TEMPERATURE

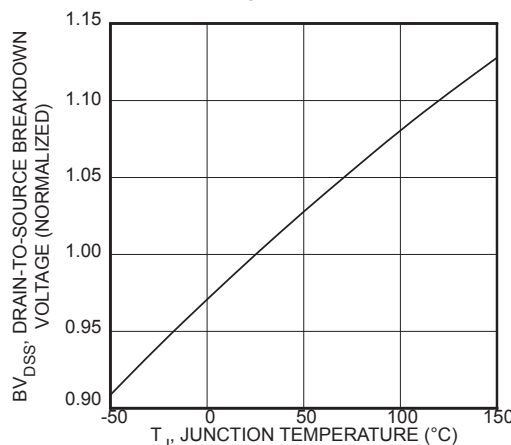


FIGURE 7, BREAKDOWN VOLTAGE vs TEMPERATURE

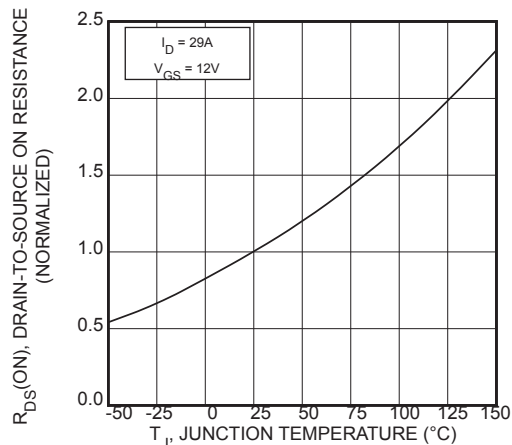


FIGURE 8, ON-RESISTANCE vs. TEMPERATURE

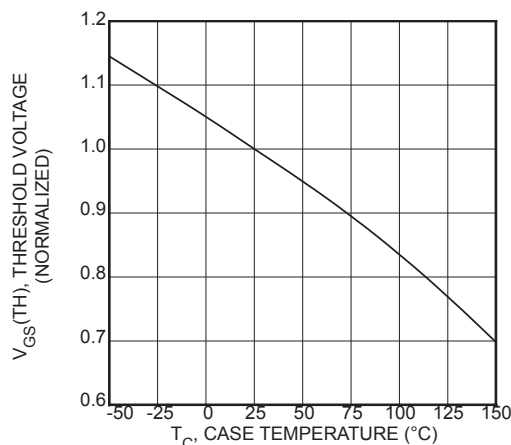
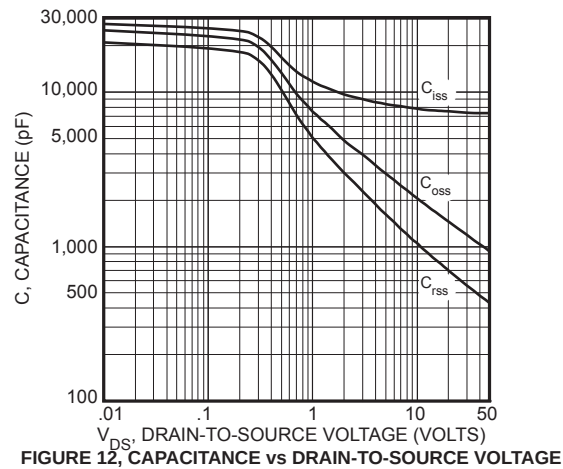
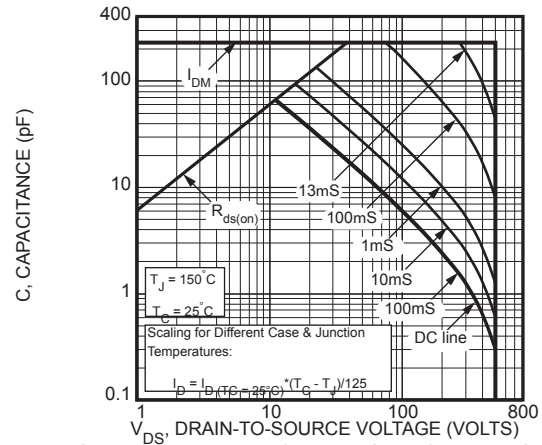
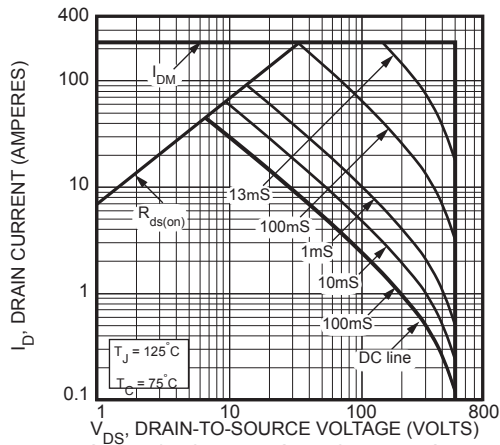


FIGURE 9, THRESHOLD VOLTAGE vs TEMPERATURE



Microsemi's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 6,939,743, 7,352,045 5,283,201 5,801,417 5,648,283 7,196,634 6,664,594 7,157,886 6,939,743 7,342,262 and foreign patents. US and Foreign patents pending. All Rights Reserved.