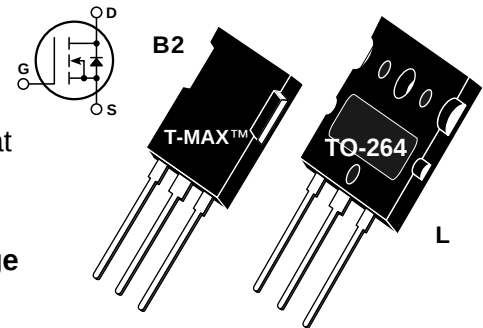


LINEAR MOSFET

Linear Mosfets are optimized 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	APL 502	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/ $^\circ\text{C}$
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^\circ\text{C}$
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 ($V_{GS} = 0V, I_D = 250 \mu\text{A}$)	500			Volts
$I_{D(ON)}$	On State Drain Current ^② ($V_{DS} > I_{D(ON)} \times R_{DS(ON)}$ Max, $V_{GS} = 8V$)	58			Amps
$R_{DS(ON)}$	Drain-Source On-State Resistance ^② ($V_{GS} = 10V, 0.5 I_D$ [Cont.])			0.09	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 ($V_{DS} = V_{GS}, I_D = 2.5\text{mA}$)	2		4	Volts

SAFE OPERATING AREA CHARACTERISTICS

Symbol	Characteristic	Test Conditions / Part Number	MIN	TYP	MAX	UNIT
SOA1	Safe Operating Area	$V_{DS} = 400V, I_{DS} = 1.063A, t = 20 \text{ sec.}, T_C = 60^\circ\text{C}$	425			Watts



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

APT Website - <http://www.advancedpower.com>

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	$V_{GS} = 15V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_D[\text{Cont.}] @ 25^\circ\text{C}$ $R_G = 0.6\Omega$		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
$R_{\theta JC}$	Junction to Case			.17	$^\circ\text{C/W}$
$R_{\theta JA}$	Junction to Ambient			40	

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

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

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

③ See MIL-STD-750 Method 3471

④ Starting $T_j = +25^\circ\text{C}$, $L = 1.78\text{mH}$, $R_G = 25\Omega$, Peak $I_L = 58\text{A}$

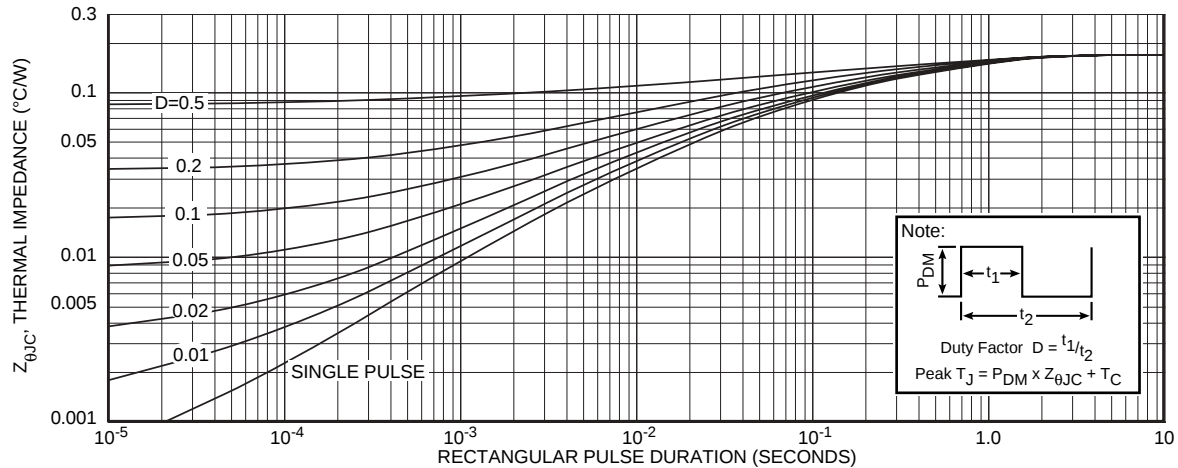


FIGURE 1, MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs PULSE DURATION

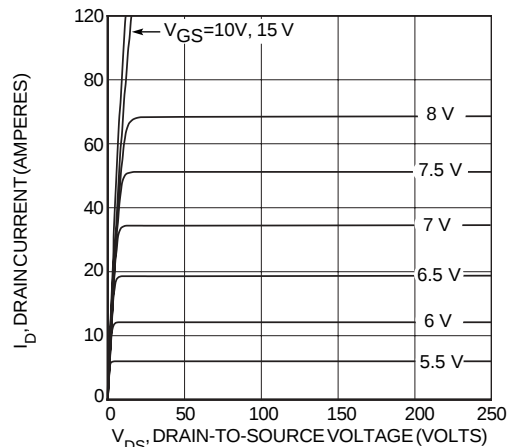


FIGURE 2, HIGH VOLTAGE OUTPUT CHARACTERISTICS

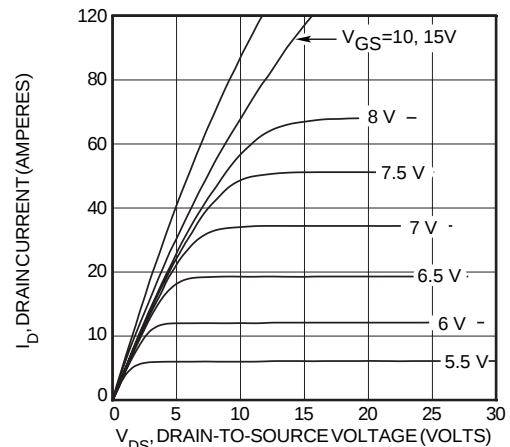
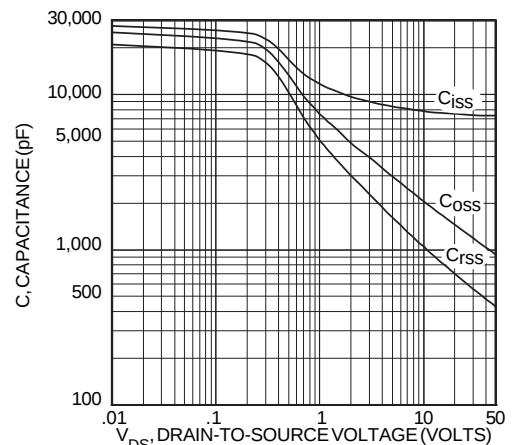
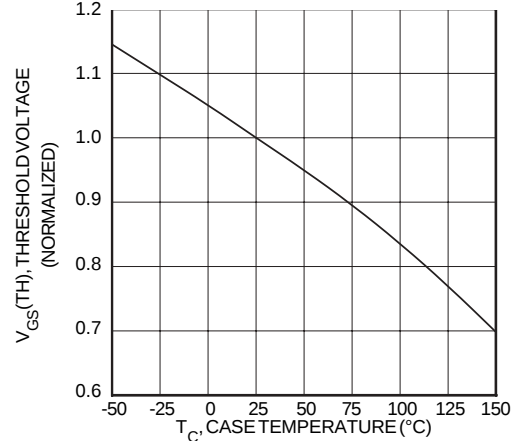
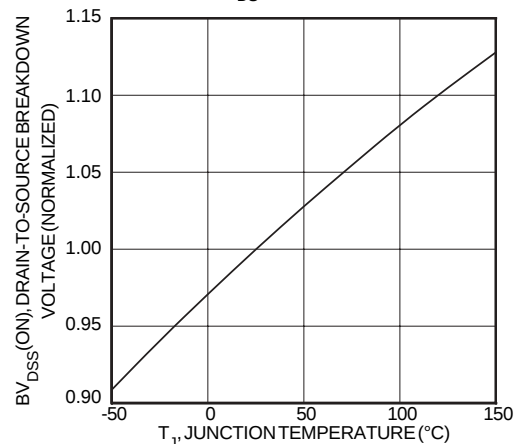
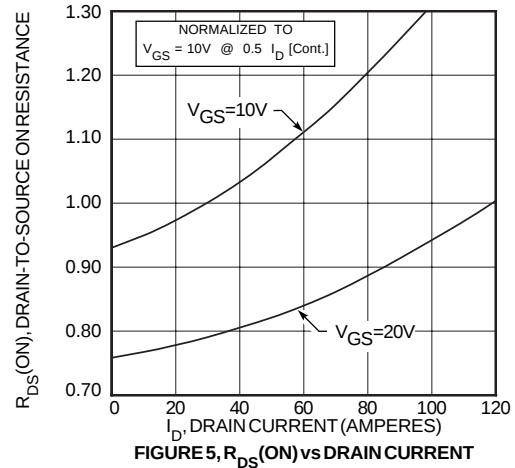
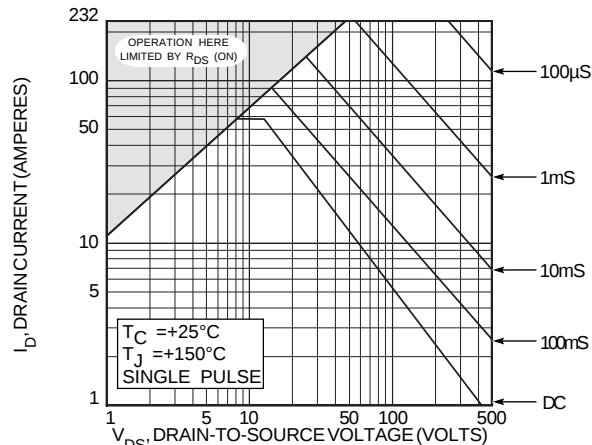
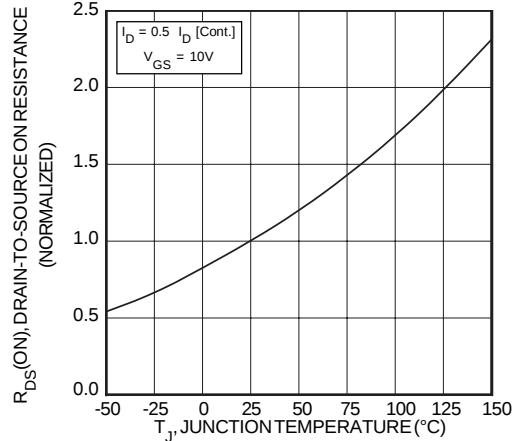
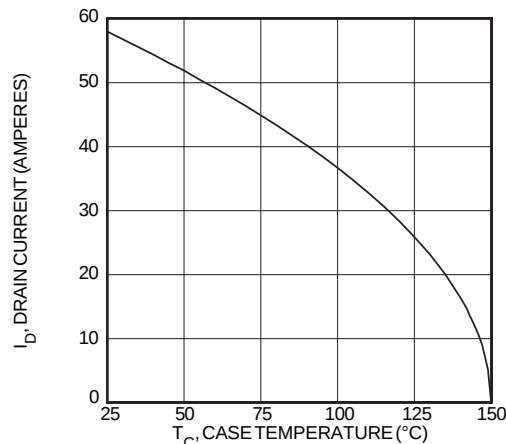
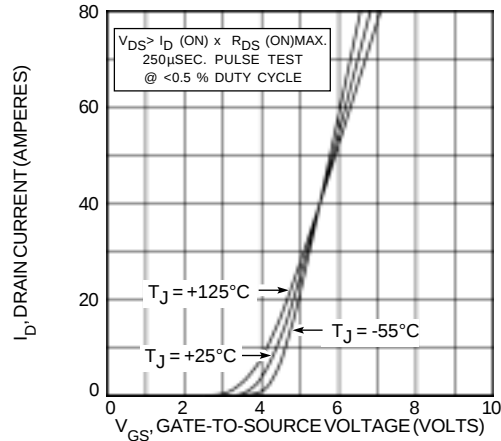
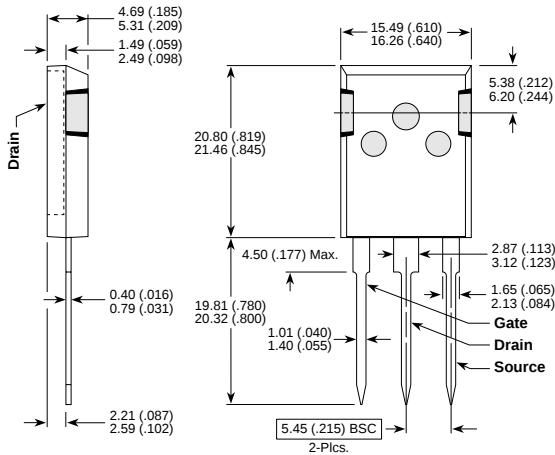


FIGURE 3, LOW VOLTAGE OUTPUT CHARACTERISTICS

Typical Performance Curves

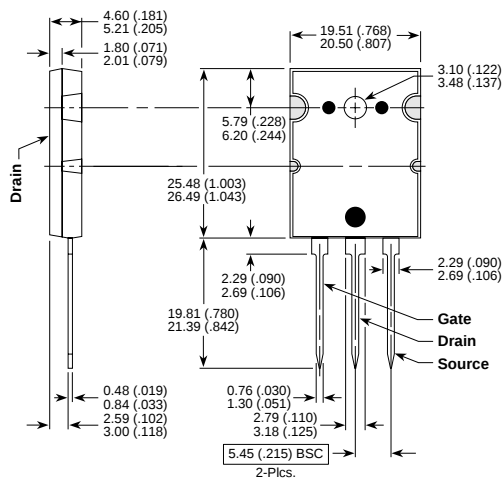


T-MAX™ (B2) Package Outline



These dimensions are equal to the TO-247 without the mounting hole.
Dimensions in Millimeters and (Inches)

TO-264 (L) Package Outline



Dimensions in Millimeters and (Inches)