

DESCRIPTION

The AOD417 is P channel enhancement mode power effect transistor which is produced using high cell density advanced trench technology. The high density process is especially able to minize on-state resistance. These devices are especially suited for low voltage application power management DC-DC converters.

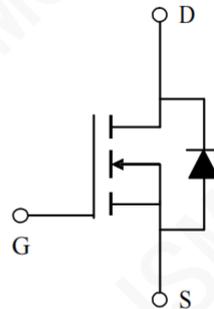
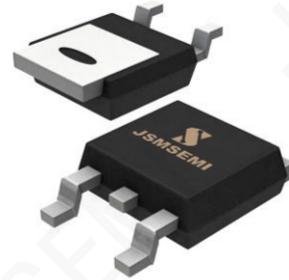
FEATURE

- ◆ -30V/-20 A, $R_{DS(ON)}=33m\ \Omega(\text{typ.})@VGS=-10V$
- ◆ -30V/-10A, $R_{DS(ON)}=52m\ \Omega(\text{typ.})@VGS=-4.5V$
- ◆ Super high design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and Maximum DC current capability
- ◆ Full RoHS compliance
- ◆ TO252 package design
- ◆ 100% UIS Tested
- ◆ 100% Rg tested

APPLICATIONS

- ◆ Power Management
- ◆ DC/DC Converter
- ◆ Load Switch

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

Symbol	arameter	Max.	Units
VDS	Drain-to-Source Voltage	-30	V
VGS	Gate-to-Source Voltage	± 20	
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, VGS @ 10V	-15	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current, VGS @ 10V	-10	
$I_D @ T_C(\text{Bottom}) = 25^\circ\text{C}$	Continuous Drain Current, VGS @ 10V	-20	
$I_D @ T_C(\text{Bottom}) = 100^\circ\text{C}$	Continuous Drain Current, VGS @ 10V	-55	
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, VGS @ 10V (Package Limited)	-70	
I_{DM}	Pulsed Drain Current	-200	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation	2.5	W
$P_D @ T_C(\text{Bottom}) = 25^\circ\text{C}$	Power Dissipation	90	
	Linear Derating Factor	0.03	W/°C
T_J	Operating Junction and	-55 to + 150	°C
T_{STG}	Storage Temperature Range		

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied

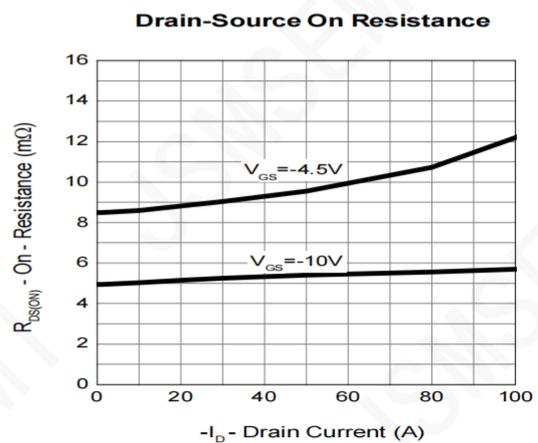
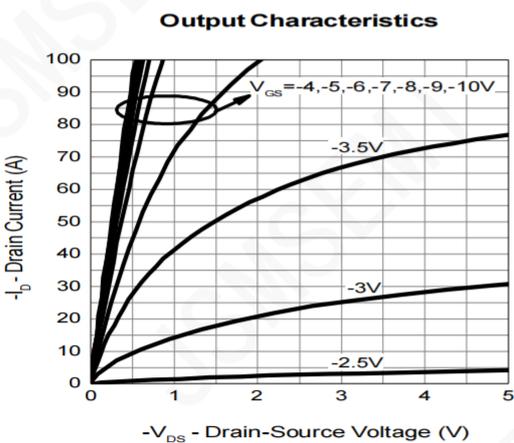
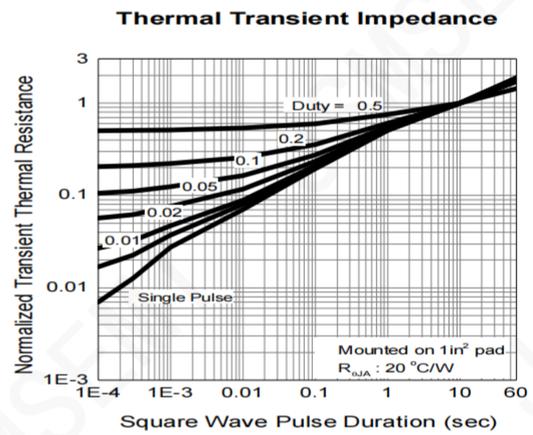
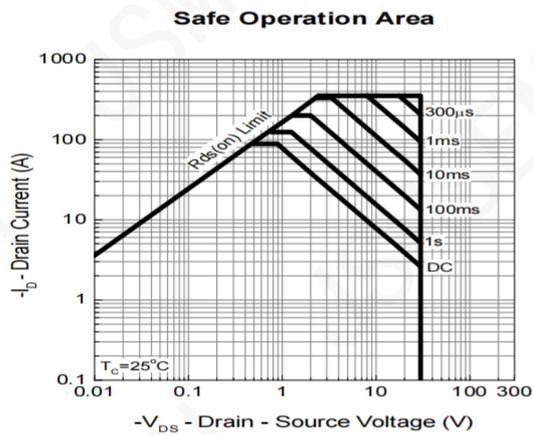
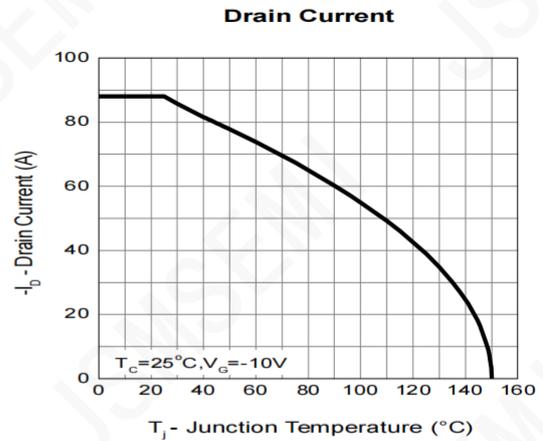
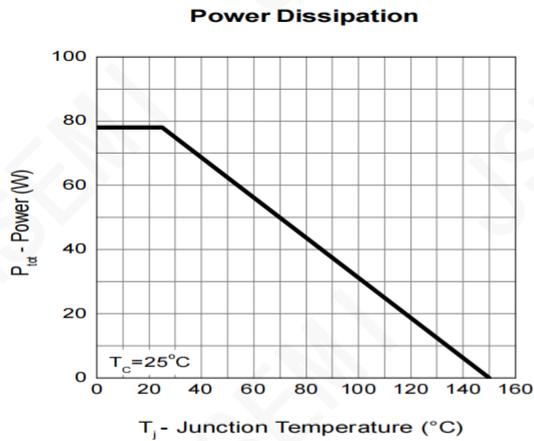
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D = -250\mu A$	-30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D = -250\mu A$	-1.0		-2.5	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 25V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-24V, V_{GS}=0$			-1	uA
		$V_{DS}=-24V, V_{GS}=0$ $T_J=85^\circ\text{C}$			-5	
$R_{DS(ON)}$	Drain-Source On-Resistance	$V_{GS}=-10V, I_D = -10 A$		33	42	m Ω
		$V_{GS} = -4.5V, I_D = -8 A$		52	68	
Source-Drain Diode						
V_{SD}	Diode Forward Voltage	$I_S = -1 A, V_{GS}=0V$		0.7	1.3	V
Dynamic Parameters						
Q_g	Total Gate Charge	$V_{DS} = -15V$ $V_{GS} = -10V$ $I_D = -10 A$		53		nC
Q_{gs}	Gate-Source Charge			23		
Q_{gd}	Gate-Drain Charge			13		
C_{iss}	Input Capacitance	$V_{DS} = -15V$ $V_{GS}=0V$ $f=1\text{MHz}$		1286		pF
C_{oss}	Output Capacitance			640		
C_{rss}	Reverse Transfer Capacitance			440		
$T_{d(on)}$	Turn-On Time	$V_{DS} = -15V$ $R_L = 0.75\Omega$ $V_{GEN} = -10V$ $R_G = 3.0\Omega$		19		nS
T_r				15		
$T_{d(off)}$	Turn-Off Time			52		
T_f				17		

Note: 1. Pulse test: pulse width \leq 300uS, duty cycle \leq 2%

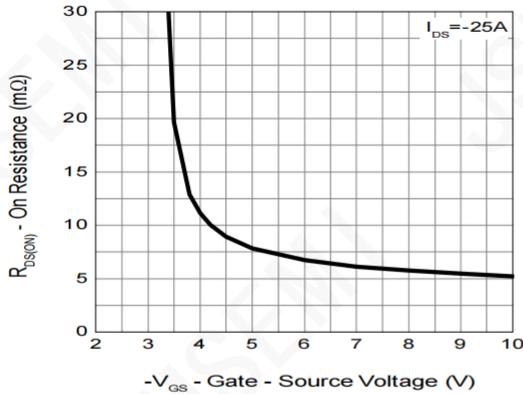
2. Static parameters are based on package level with recommended wire bonding

■ **TYPICAL CHARACTERISTICS** (25°C Unless Note)

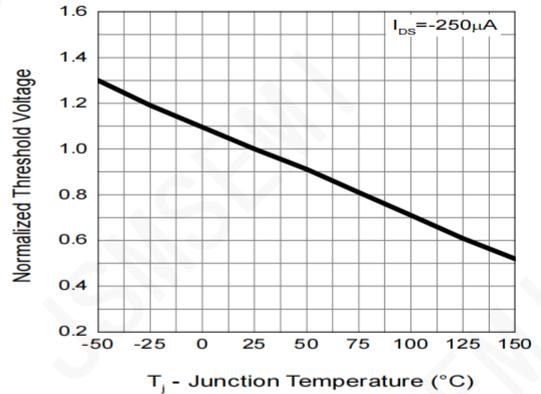


■ **TYPICAL CHARACTERISTICS** (continuous)

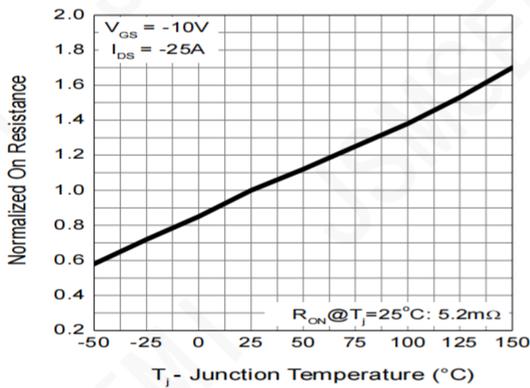
Gate-Source On Resistance



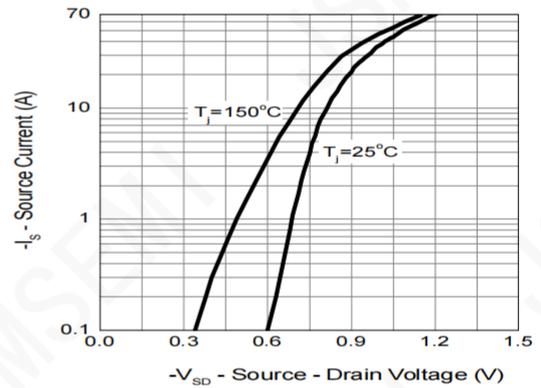
Gate Threshold Voltage



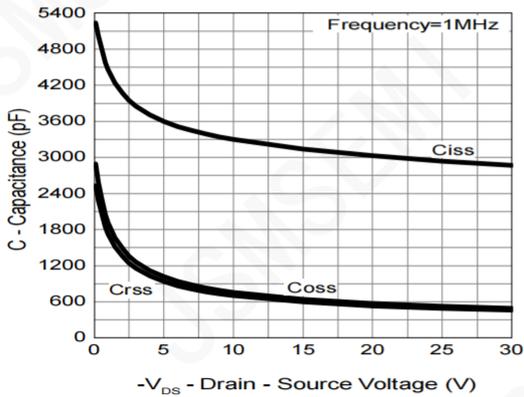
Drain-Source On Resistance



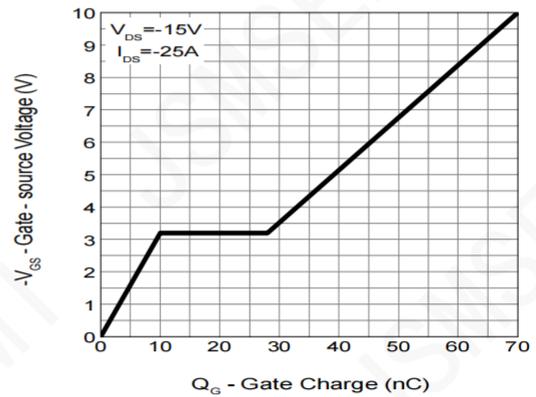
Source-Drain Diode Forward



Capacitance



Gate Charge



■ TO-252 Outline Package Dimension

Dimensions are shown in millimeters (inches)

