P-Channel 60-V (D-S) MOSFET

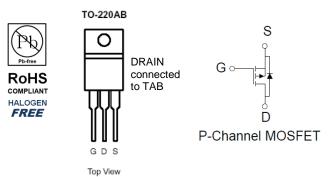
Key Features:

- Low r_{DS(on)} trench technology
- · Low thermal impedance
- · Fast switching speed

Typical Applications:

- · White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

PRODUCT SUMMARY			
V _{DS} (V)	$r_{DS(on)}(m\Omega)$	I⊳(A)	
-60	12 @ V _{GS} = -10V	-90 ^a	
	16 @ V _{GS} = -4.5V	-90	



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^{\circ}$ C UNLESS OTHERWISE NOTED)						
Parameter		Symbol	Limit	Units		
Drain-Source Voltage		V_{DS}	-60	V		
Gate-Source Voltage		V_{GS}	±20	V		
Continuous Drain Current a	T _A =25°C	I_D	-90	Α		
Pulsed Drain Current ^b		I _{DM}	-360	^		
Continuous Source Current (Diode Conduction) a		I _S	-90	Α		
Power Dissipation ^a	T _A =25°C	P_D	300	W		
Operating Junction and Storage Temperature Range	· ·	T_J,T_stg	-55 to 175	°C		

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Maximum	Units		
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	62.5	°C/W		
Maximum Junction-to-Case	$R_{\theta JC}$	1	C/VV		

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Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

Electrical Characteristics

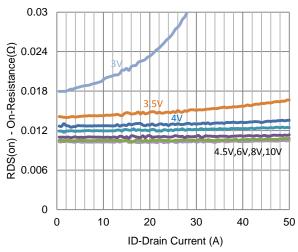
Parameter	Symbol	Test Conditions	Min	Тур	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_{D} = -250 \text{ uA}$	-1			V
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			±100	nA
Zara Cata Valtaga Drain Current	1	$V_{DS} = -48 \text{ V}, V_{GS} = 0 \text{ V}$			-1	uA
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = -48 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55^{\circ}\text{C}$			-25	
On-State Drain Current	I _{D(on)}	$V_{DS} = -5 \text{ V}, V_{GS} = -10 \text{ V}$	-100			Α
Drain-Source On-Resistance	r	$V_{GS} = -10 \text{ V}, I_{D} = -20 \text{ A}$			12	mΩ
	r _{DS(on)}	$V_{GS} = -4.5 \text{ V}, I_{D} = -16 \text{ A}$			16	
Forward Transconductance	g _{fs}	$V_{DS} = -15 \text{ V}, I_{D} = -20 \text{ A}$		25		S
Diode Forward Voltage	V_{SD}	$I_{S} = -20 \text{ A}, V_{GS} = 0 \text{ V}$		-0.9		V
		Dynamic				
Total Gate Charge	Q_g	$V_{DS} = -30 \text{ V}, V_{GS} = -4.5 \text{ V},$ $I_{D} = -20 \text{ A}$		105		nC
Gate-Source Charge	Q_{gs}			26		
Gate-Drain Charge	Q_gd			51		
Turn-On Delay Time	t _{d(on)}	V - 20 V B - 15 O		19		
Rise Time	t _r	$V_{DS} = -30 \text{ V}, R_{L} = 1.5 \Omega,$ $I_{D} = -20 \text{ A},$ $V_{GEN} = -10 \text{ V}, R_{GEN} = 6 \Omega$		40		ns
Turn-Off Delay Time	t _{d(off)}			289		
Fall Time	t _f			108		
Input Capacitance	C _{iss}			7267		
Output Capacitance	C _{oss}	$V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		592		pF
Reverse Transfer Capacitance	C _{rss}			411		

Notes

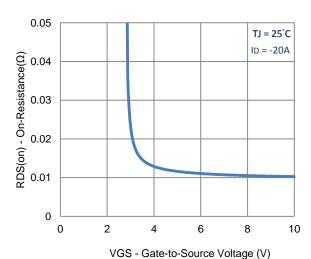
- a. Pulse test: PW <= 300us duty cycle <= 2%.
- b. Guaranteed by design, not subject to production testing.

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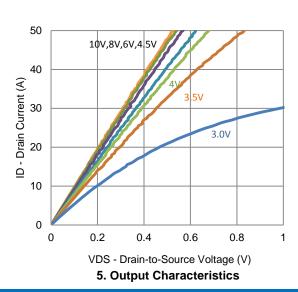
Typical Electrical Characteristics

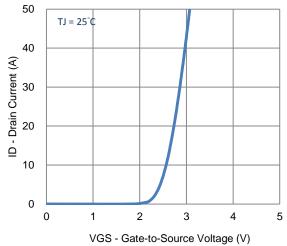


1. On-Resistance vs. Drain Current

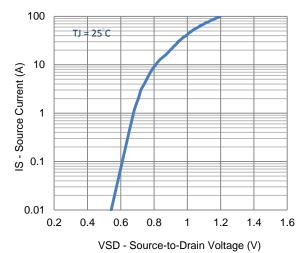


3. On-Resistance vs. Gate-to-Source Voltage

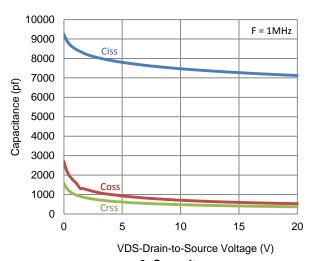




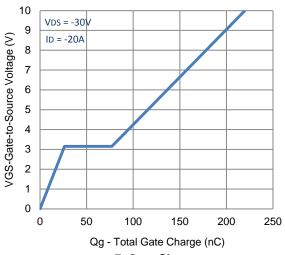
2. Transfer Characteristics

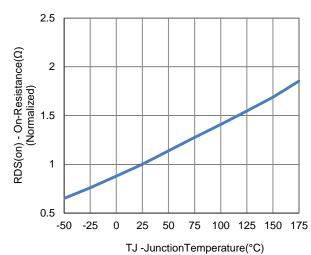


4. Drain-to-Source Forward Voltage



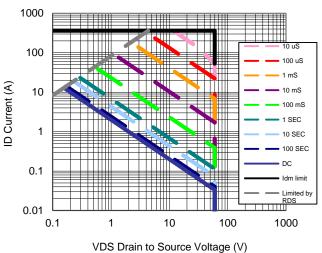
Typical Electrical Characteristics

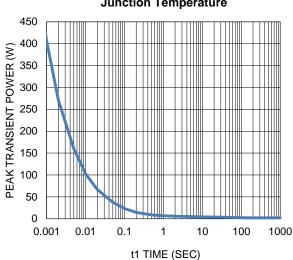




7. Gate Charge

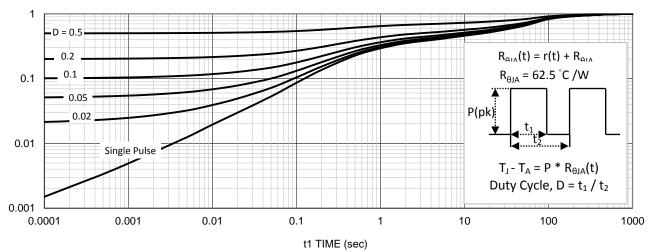






9. Safe Operating Area

10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information

