

## N-Channel 40-V (D-S) MOSFET

### Key Features:

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

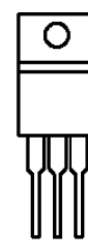
### Typical Applications:

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



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

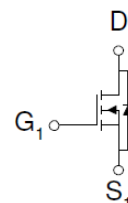
TO-220AB



G D S

Top View

DRAIN  
connected  
to TAB



N-Channel MOSFET

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Limit	Units
Drain-Source Voltage	$V_{DS}$	40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>a</sup>	$I_D$	202	A
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	808	
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	202	A
Power Dissipation <sup>a</sup>	$P_D$	300	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

### THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient <sup>a</sup>	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	0.5	

### Notes

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

## Electrical Characteristics

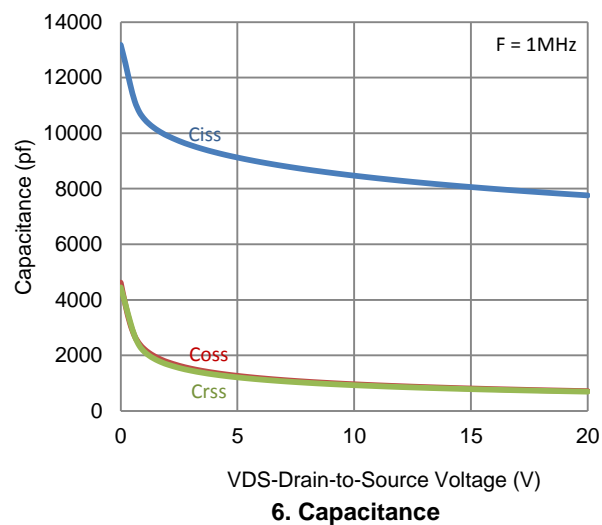
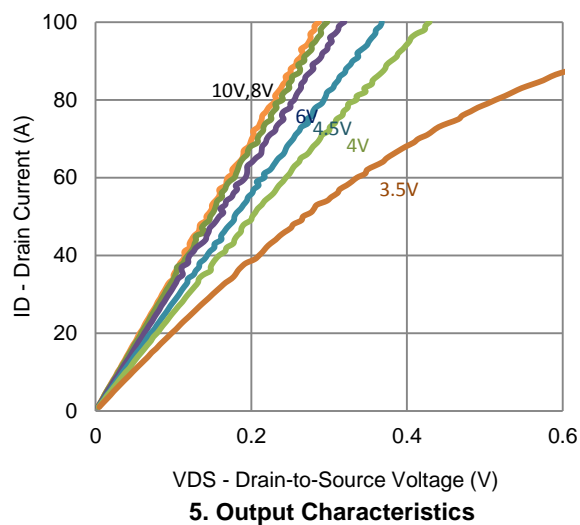
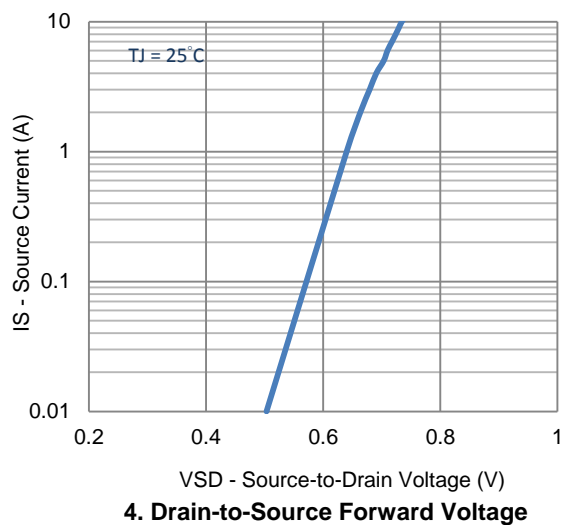
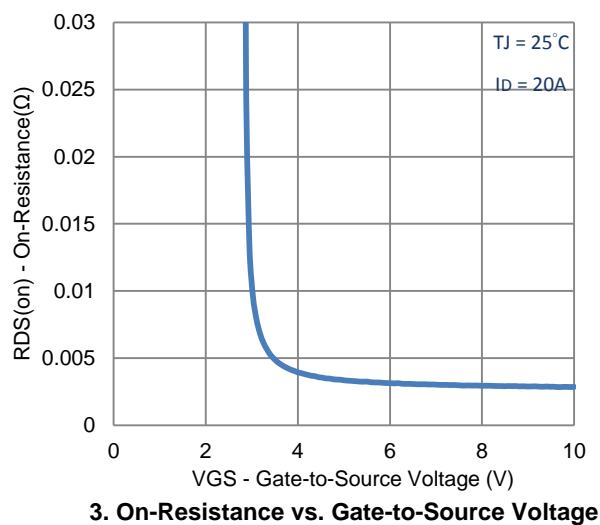
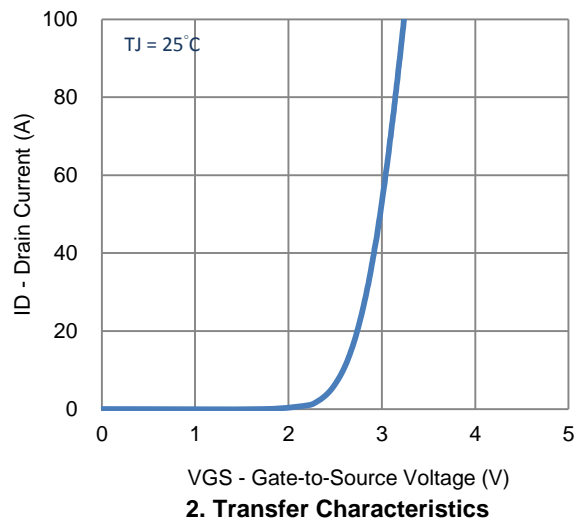
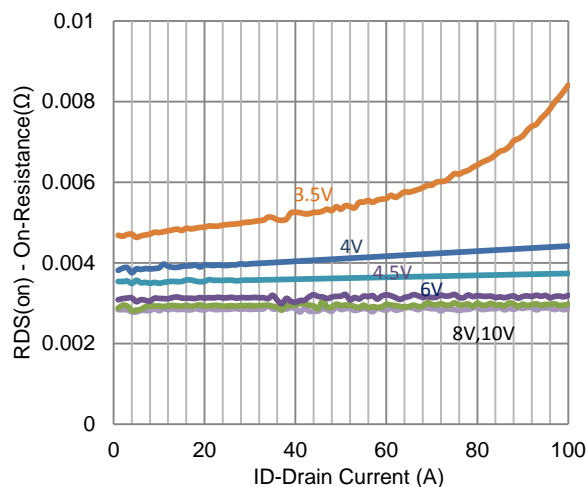
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 32 V, V_{GS} = 0 V$			1	uA
		$V_{DS} = 32 V, V_{GS} = 0 V, T_J = 55^\circ C$			25	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	120			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = 10 V, I_D = 30 A$			4	mΩ
		$V_{GS} = 4.5 V, I_D = 20 A$			6	
Forward Transconductance	$g_{fs}$	$V_{DS} = 15 V, I_D = 30 A$		30		S
Diode Forward Voltage	$V_{SD}$	$I_S = 50 A, V_{GS} = 0 V$		1.1		V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 20 V, V_{GS} = 4.5 V, I_D = 20 A$		64		nC
Gate-Source Charge	$Q_{gs}$			16		
Gate-Drain Charge	$Q_{gd}$			33		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 20 V, R_L = 1 \Omega, I_D = 20 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$		22		ns
Rise Time	$t_r$			36		
Turn-Off Delay Time	$t_{d(off)}$			209		
Fall Time	$t_f$			86		
Input Capacitance	$C_{iss}$	$V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz$		8060		pF
Output Capacitance	$C_{oss}$			808		
Reverse Transfer Capacitance	$C_{rss}$			783		

## Notes

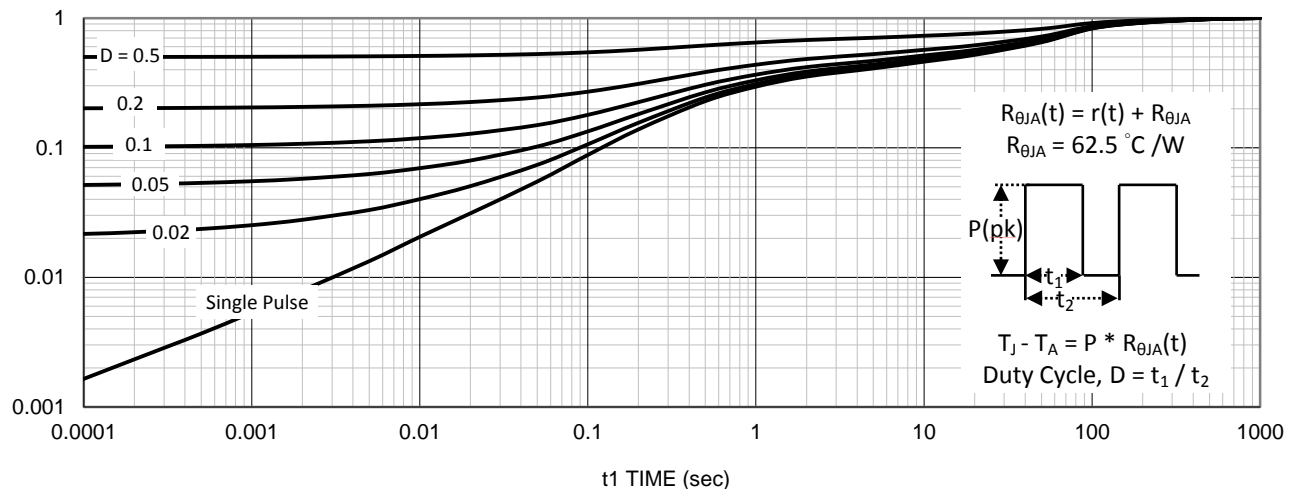
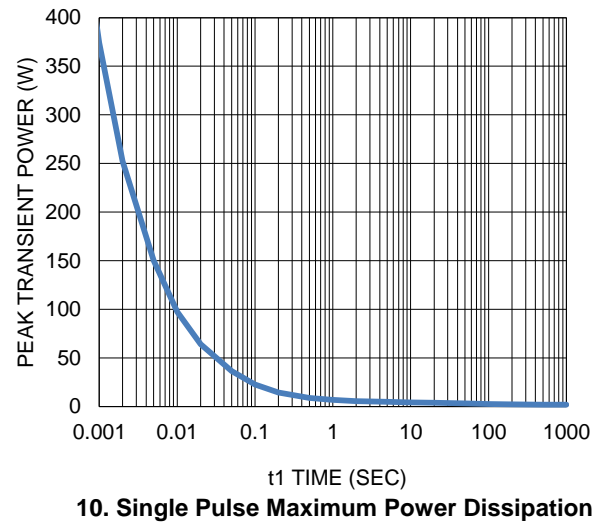
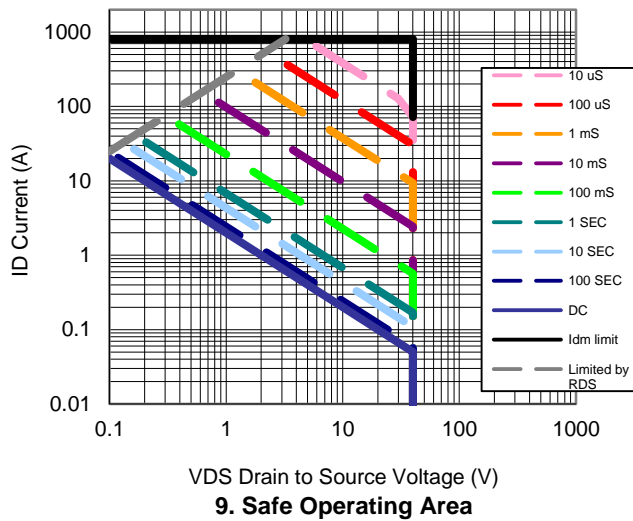
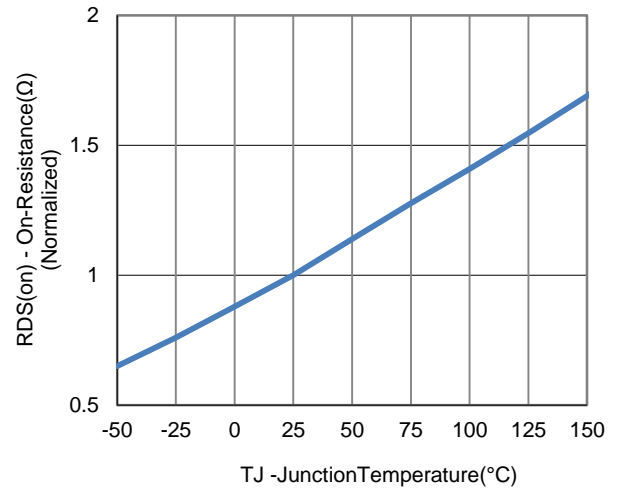
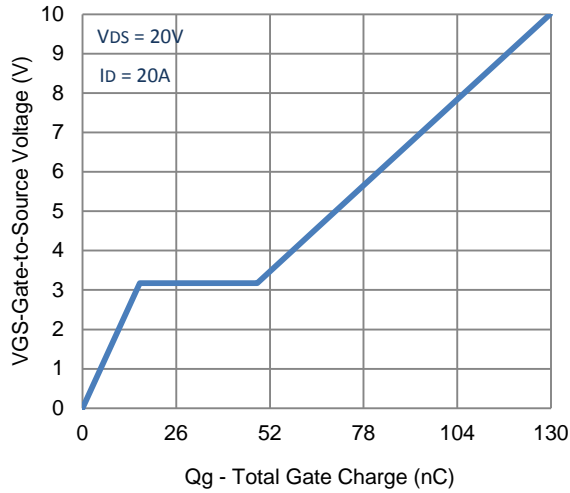
- Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

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## Typical Electrical Characteristics



## Typical Electrical Characteristics



## Package Information

