

## N-Channel 100-V (D-S) MOSFET

### Key Features:

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

### Typical Applications:

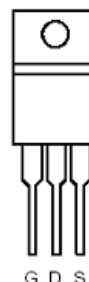
- PoE Power Sourcing Equipment
- PoE Powered Devices
- Telecom DC/DC converters
- White LED boost converters

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ (m $\Omega$ )	$I_D$ (A)
100	78 @ $V_{GS} = 10V$	25
	92 @ $V_{GS} = 5.5V$	23

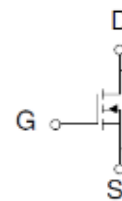


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

TO-220CFM



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Units
Drain-Source Voltage		$V_{DS}$	100	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>a</sup>	$T_C = 25^\circ\text{C}$	$I_D$	25	A
Pulsed Drain Current <sup>b</sup>		$I_{DM}$	150	
Continuous Source Current (Diode Conduction) <sup>a</sup>		$I_S$	25	A
Power Dissipation <sup>a</sup>	$T_C = 25^\circ\text{C}$	$P_D$	120	W
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 175	$^\circ\text{C}$

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	$R_{\theta JC}$	1.25	

### Notes

- Package limited
- Pulse width limited by maximum junction temperature

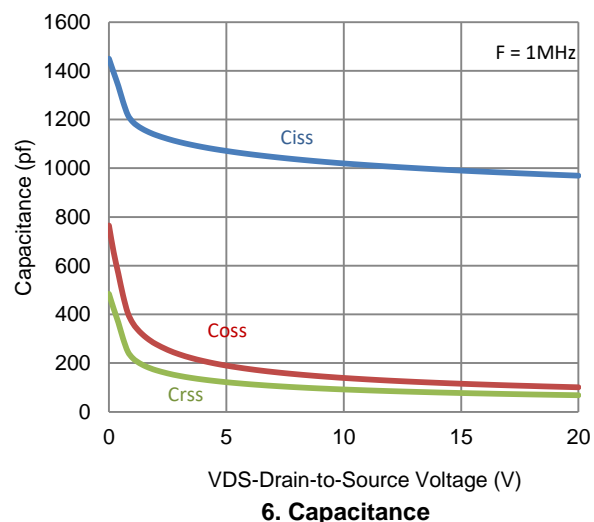
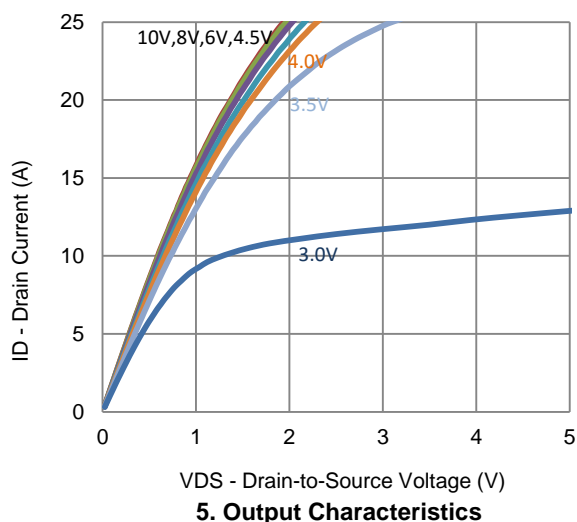
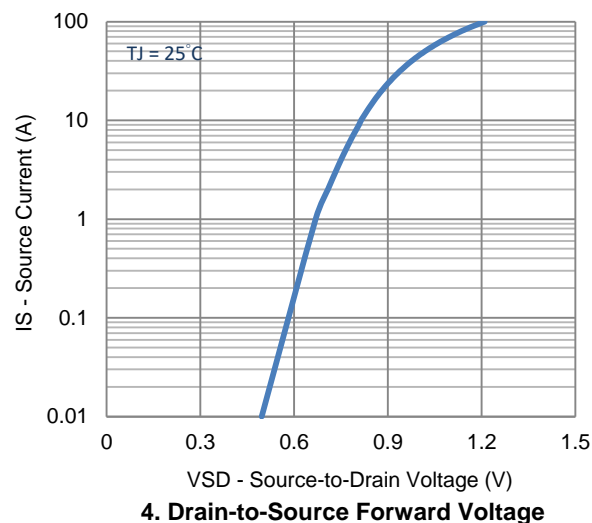
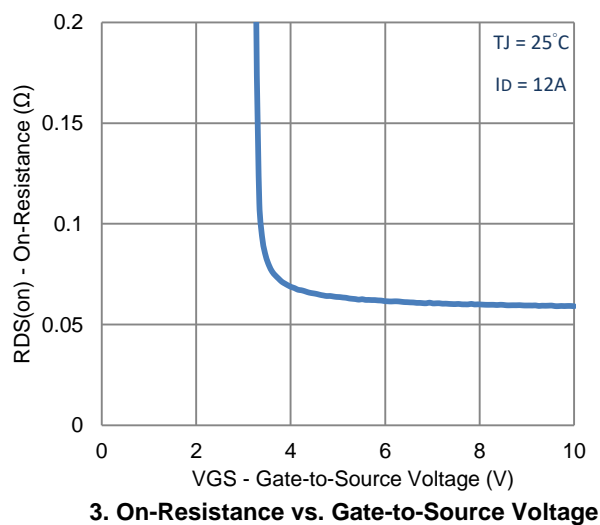
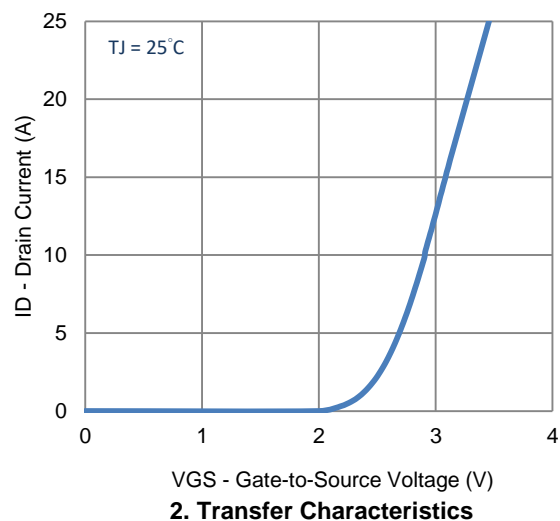
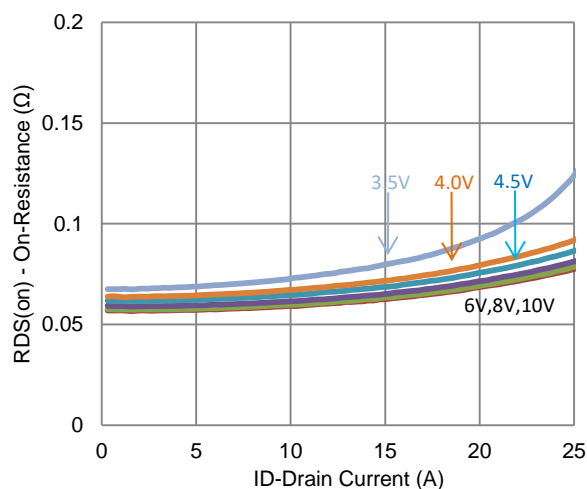
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1		3.5	V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 V, V_{GS} = 20 V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 80 V, V_{GS} = 0 V$			1	uA
		$V_{DS} = 80 V, V_{GS} = 0 V, T_J = 55^\circ C$			25	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	34			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = 10 V, I_D = 12 A$			78	mΩ
		$V_{GS} = 5.5 V, I_D = 11 A$			92	
Forward Transconductance	$g_{fs}$	$V_{DS} = 15 V, I_D = 12 A$		20		S
Diode Forward Voltage	$V_{SD}$	$I_S = 12.5 A, V_{GS} = 0 V$		0.83		V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 50 V, V_{GS} = 5.5 V, I_D = 12 A$		34		nC
Gate-Source Charge	$Q_{gs}$			4.6		
Gate-Drain Charge	$Q_{gd}$			22		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 50 V, R_L = 4.2 \Omega, I_D = 12 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$		6.3		ns
Rise Time	$t_r$			7.8		
Turn-Off Delay Time	$t_{d(off)}$			36		
Fall-Time	$t_f$			47		
Input Capacitance	$C_{iss}$	$V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz$		990		pF
Output Capacitance	$C_{oss}$			115		
Reverse Transfer Capacitance	$C_{rss}$			77		

## Notes

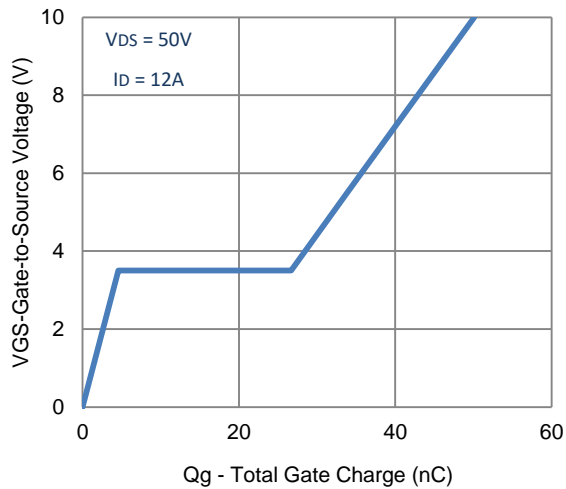
- Pulse test:  $PW \leq 300 \mu s$  duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.

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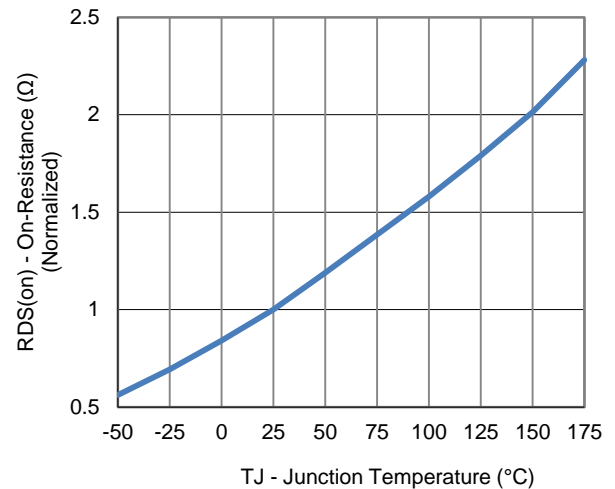
## Typical Electrical Characteristics



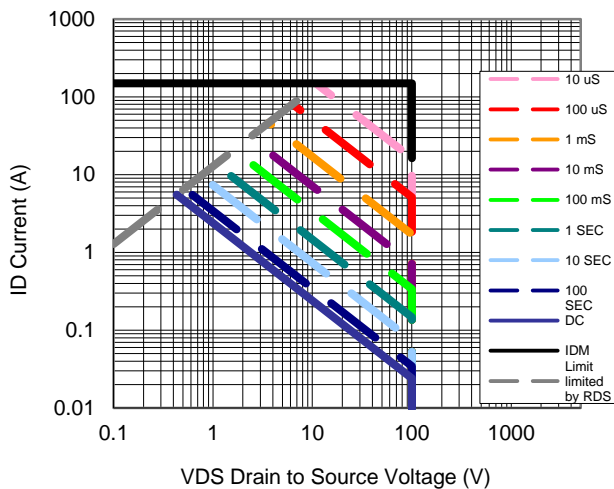
## Typical Electrical Characteristics



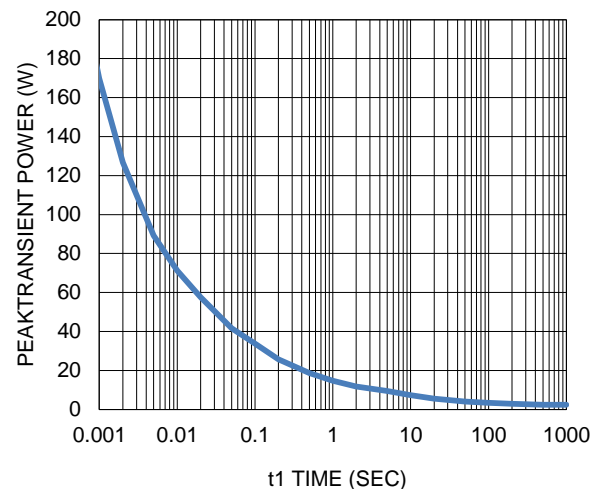
7. Gate Charge



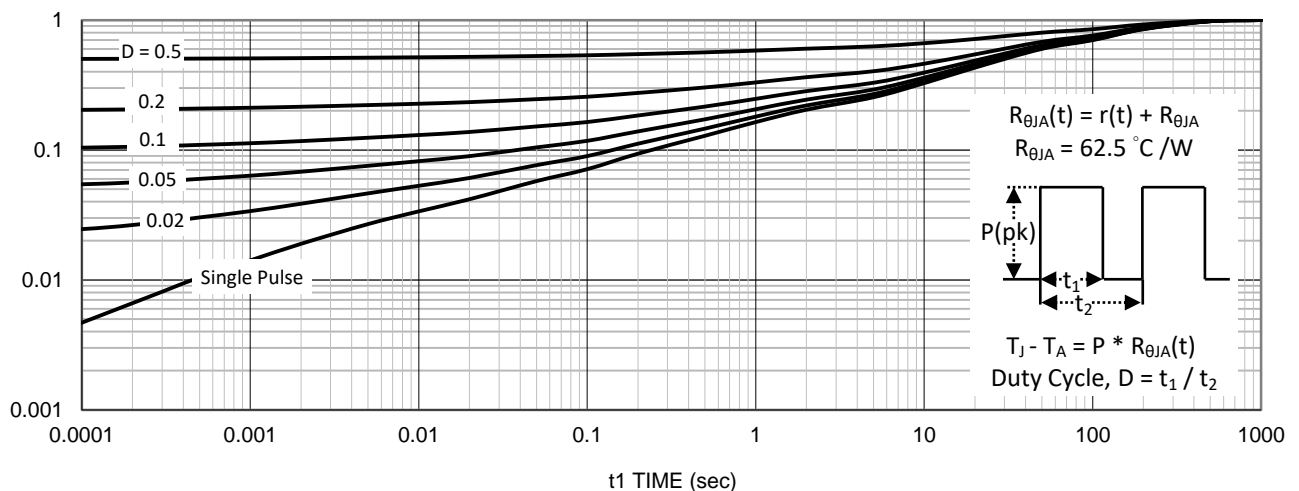
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

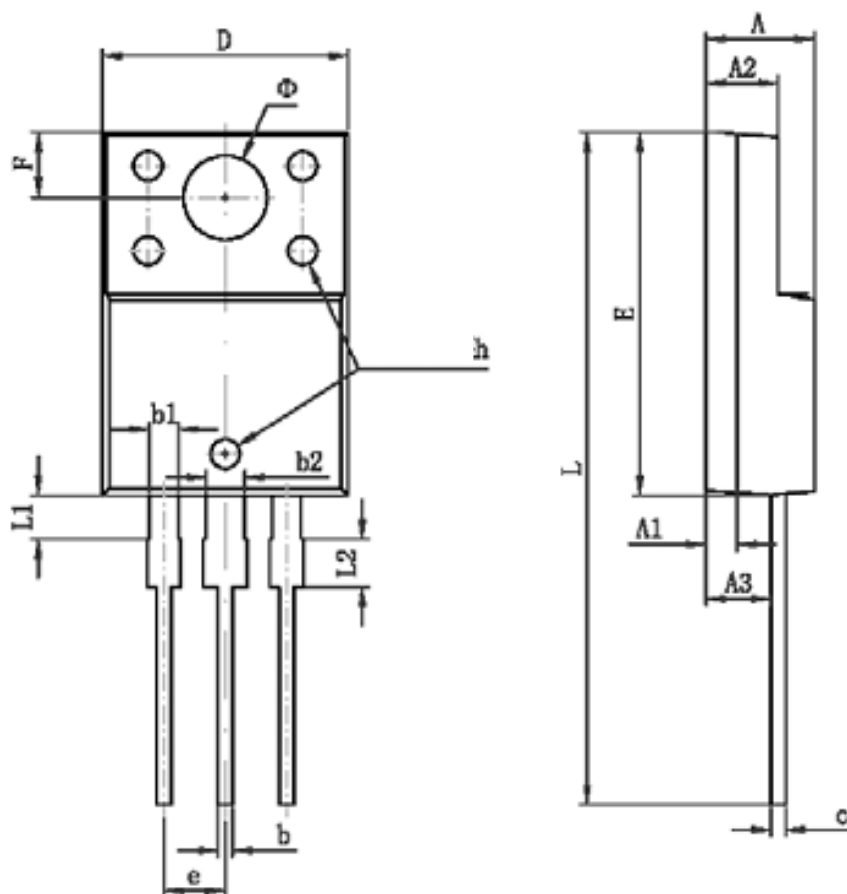


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

## Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.300	4.700	0.169	0.185
A1	1.300 REF		0.051 REF	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP		0.100 TYP	
F	2.700 REF		0.106 REF	
$\Phi$	3.500 REF		0.138 REF	
h	0.000	0.300	0.000	0.012
L	28.000	28.400	1.102	1.118
L1	1.700	1.900	0.067	0.075
L2	1.900	2.100	0.075	0.083