

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

### Key Features:

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

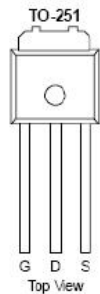
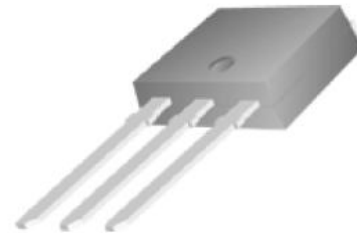
### Typical Applications:

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

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ (m $\Omega$ )	$I_D$ (A)
100	14 @ $V_{GS} = 10V$	50 <sup>a</sup>
	16 @ $V_{GS} = 4.5V$	



**RoHS**  
COMPLIANT  
HALOGEN  
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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>	$T_C = 25^\circ\text{C}$	$I_D$	50	A
Pulsed Drain Current <sup>b</sup>		$I_{DM}$	200	
Continuous Source Current (Diode Conduction) <sup>a</sup>	$T_C = 25^\circ\text{C}$	$I_S$	50	A
Power Dissipation <sup>a</sup>	$T_C = 25^\circ\text{C}$	$P_D$	50	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>c</sup>	$R_{\theta JA}$	40	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Case	$R_{\theta JC}$	3	

### Notes

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

## Electrical Characteristics

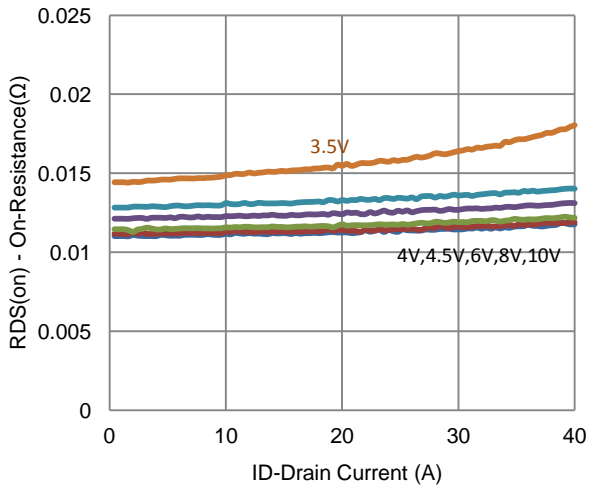
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 80 V, V_{GS} = 0 V$			1	uA
		$V_{DS} = 80 V, V_{GS} = 0 V, T_J = 55^\circ C$			10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	65			A
Drain-Source On-Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = 10 V, I_D = 20 A$			14	mΩ
		$V_{GS} = 4.5 V, I_D = 16 A$			16	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 15 V, I_D = 20 A$		19		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = 25 A, V_{GS} = 0 V$		0.85		V
<b>Dynamic <sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 50 V, V_{GS} = 4.5 V,$ $I_D = 20 A$		72		nC
Gate-Source Charge	$Q_{gs}$			24		
Gate-Drain Charge	$Q_{gd}$			26		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 50 V, R_L = 2.5 \Omega,$ $I_D = 20 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$		19		ns
Rise Time	$t_r$			24		
Turn-Off Delay Time	$t_{d(off)}$			197		
Fall Time	$t_f$			54		
Input Capacitance	$C_{iss}$	$V_{DS} = 15 V, V_{GS} = 0 V, f = 1 \text{ Mhz}$		18766		pF
Output Capacitance	$C_{oss}$			347		
Reverse Transfer Capacitance	$C_{rss}$			329		

## Notes

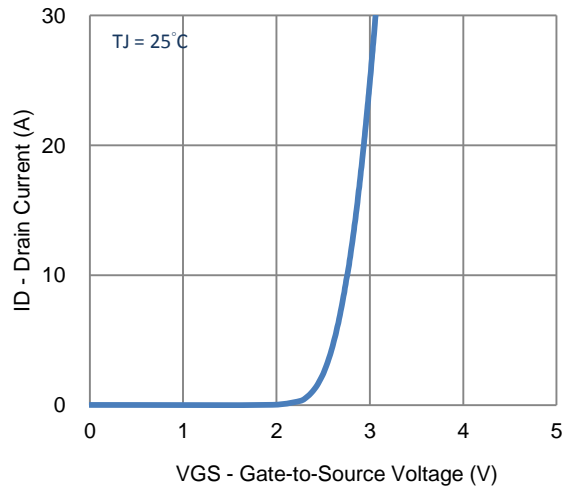
- Pulse test:  $PW \leq 300 \mu s$  duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.

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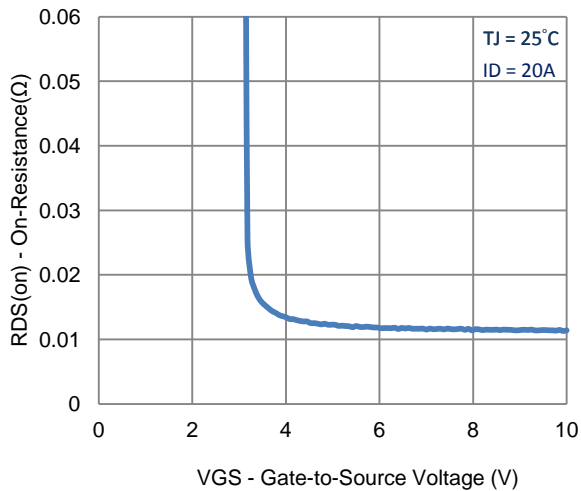
Typical Electrical Characteristics



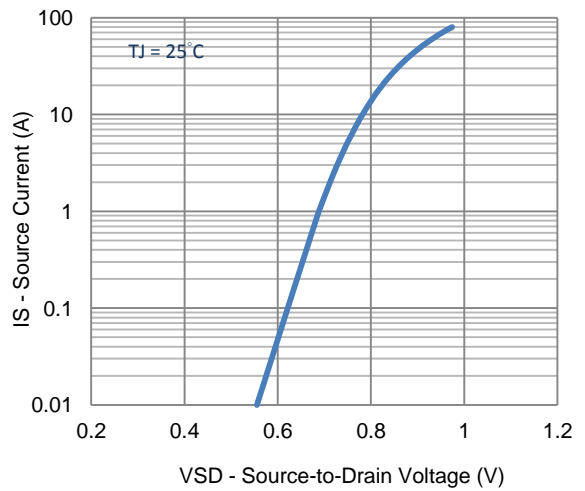
1. On-Resistance vs. Drain Current



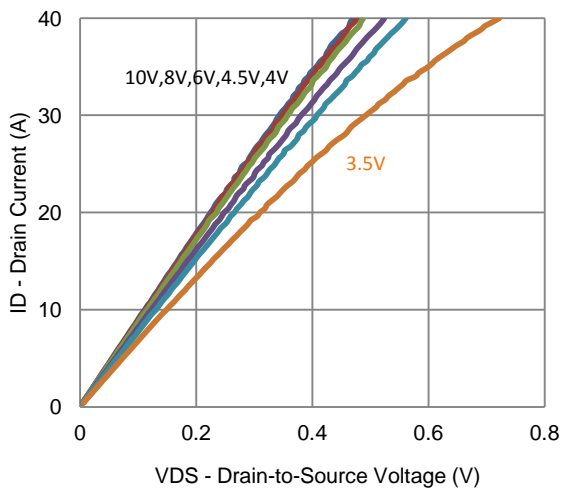
2. Transfer Characteristics



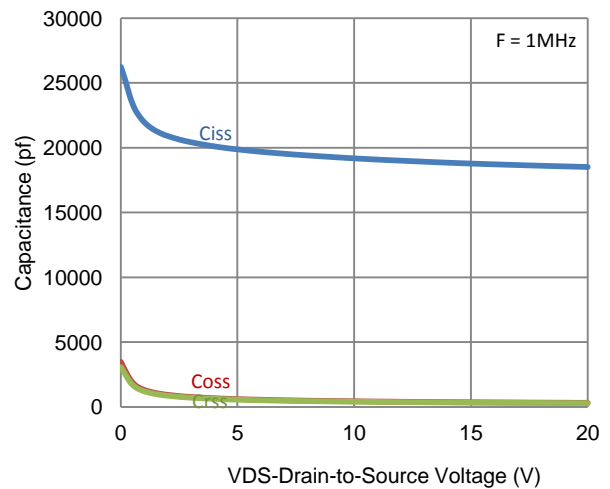
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

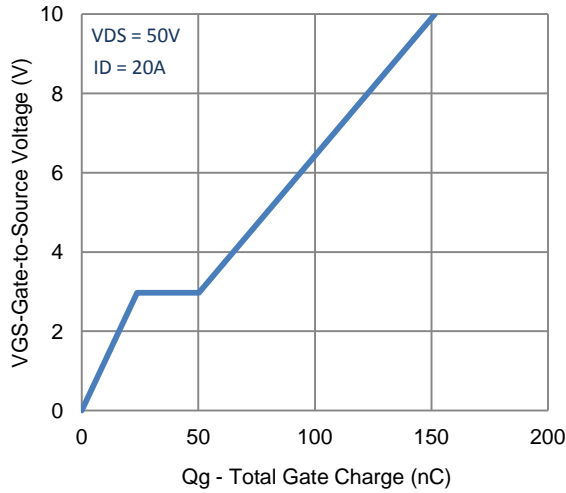


5. Output Characteristics

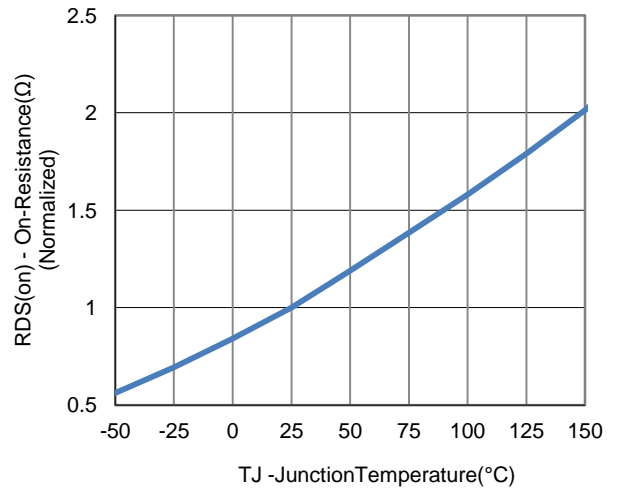


6. Capacitance

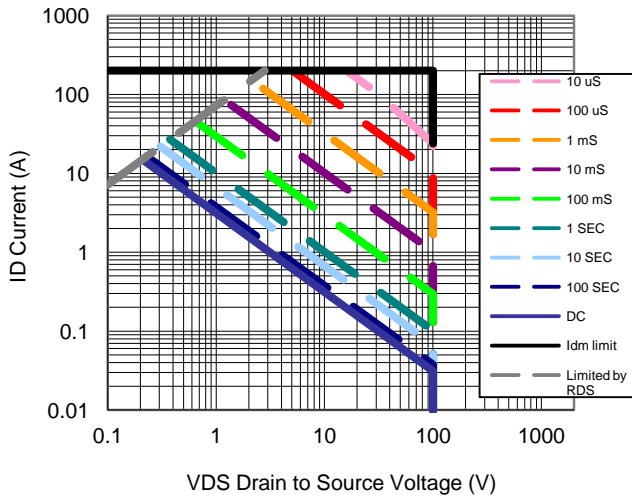
Typical Electrical Characteristics



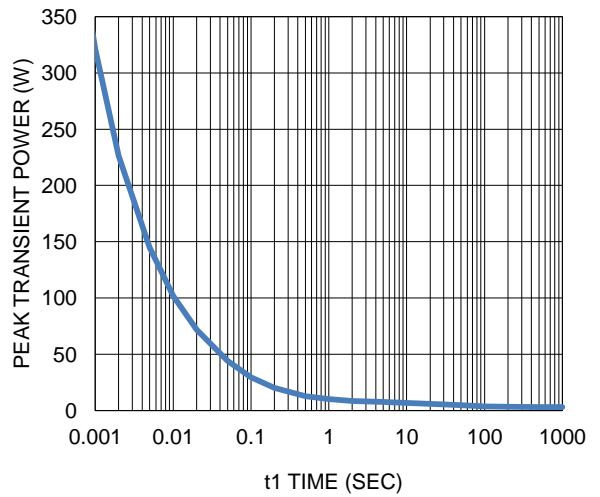
7. Gate Charge



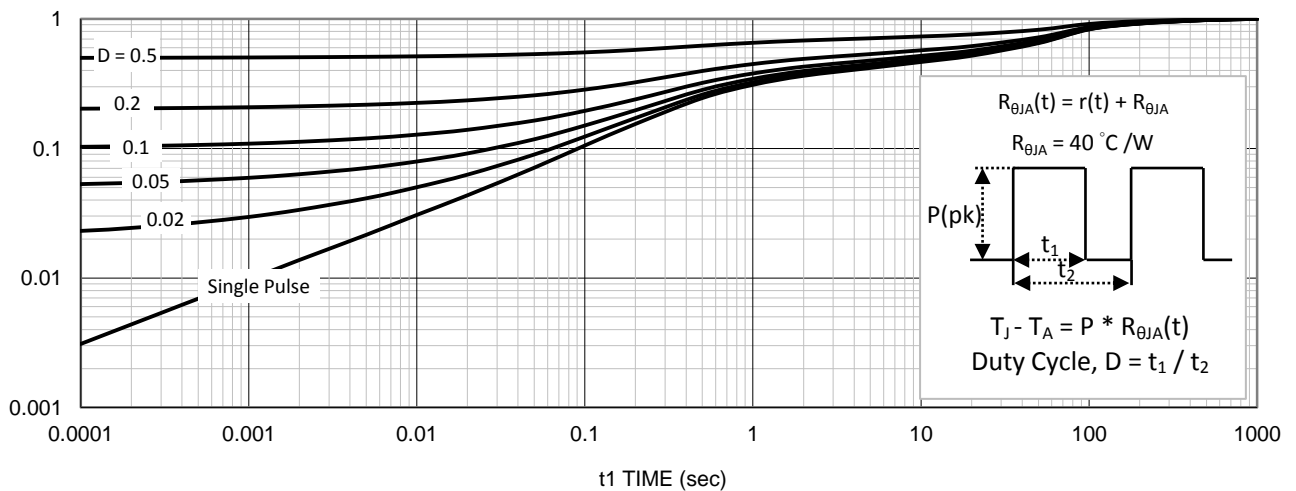
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



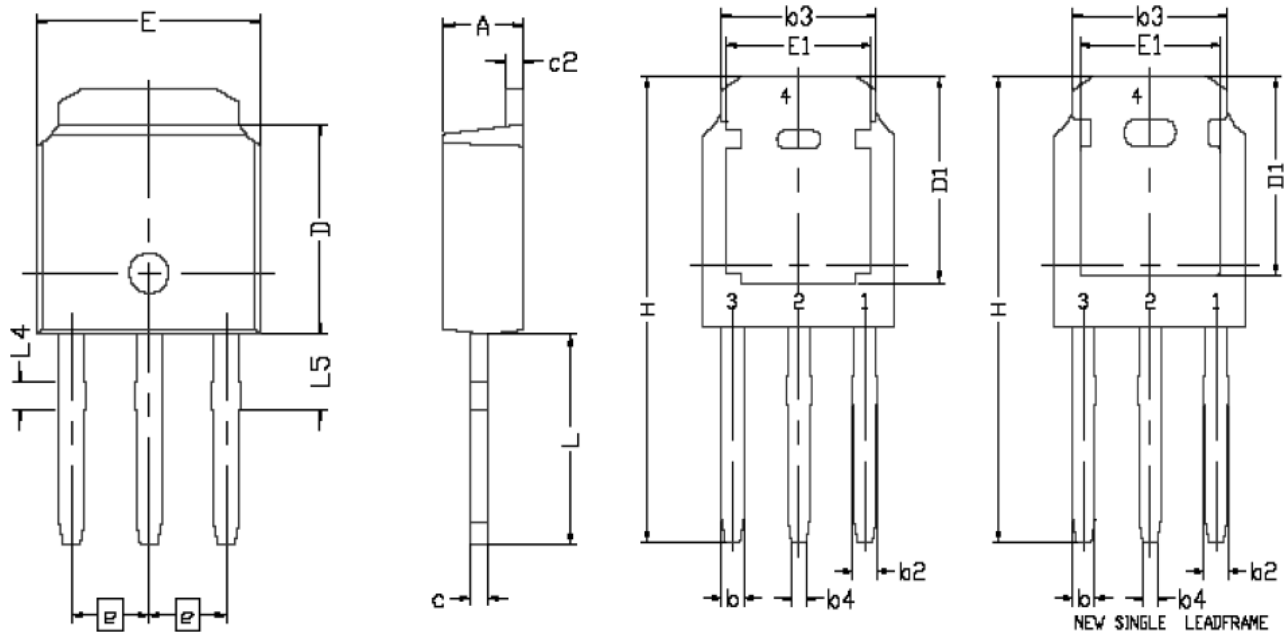
10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information

# Package Information



DIMENSIONAL REQUIREMENTS			
SYMBOL	MIN	NOM	MAX
E	6.40	6.60	6.73
L	8.80	9.20	9.60
L4	0.66	0.76	0.86
L5	1.96	2.16	2.36
D	6.00	6.10	6.22
H	14.80	15.30	15.82
B	0.64	0.76	0.88
B2	0.77	0.84	1.14
B3	5.21	5.34	5.46
B4	0.41	0.51	0.61
E	<b>2.286 BSC</b>		
A	2.20	2.30	2.38
C	0.40	0.50	0.60
C2	0.40	0.50	0.60
D1	5.30		
E1	4.40		