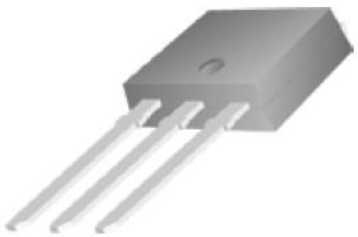
N-Channel 100-V (D-S) MOSFET

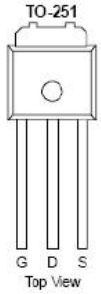
Key Features:
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

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

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (mΩ)	I_D (A)
100	14 @ V_{GS} = 10V	50[a]
	16 @ V_{GS} = 4.5V	

Pb-free
RoHS COMPLIANT
HALOGEN FREE





ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
Parameter		**Symbol**	**Limit**	**Units**
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current [a]	T_C=25°C	I_D	50	A
Pulsed Drain Current [b]		I_{DM}	200	
Continuous Source Current (Diode Conduction) [a]	T_C=25°C	I_S	50	A
Power Dissipation [a]	T_C=25°C	P_D	50	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 [c]	$R_{\theta JA}$	40	°C/W
Maximum Junction-to-Case	$R_{\theta JC}$	3	

Notes
a. Package Limited
b. Pulse width limited by maximum junction temperature
c. Surface Mounted on 1” x 1” FR4 Board.

Electrical Characteristics

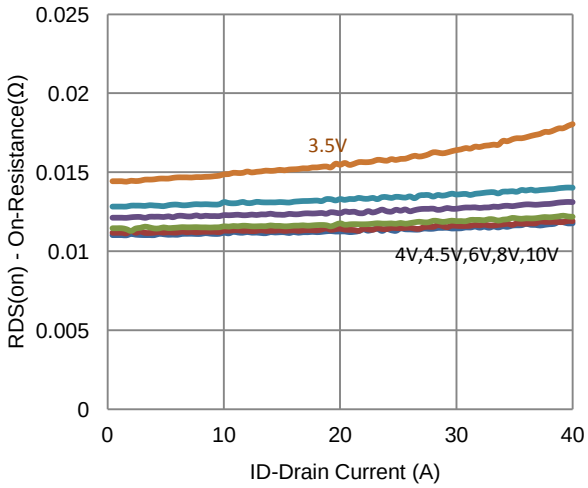
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 uA	1			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80 V, V_{GS} = 0 V			1	uA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J = 55°C			10	
On-State Drain Current [a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	65			A
Drain-Source On-Resistance [a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 20 A			14	mΩ
		V_{GS} = 4.5 V, I_D = 16 A			16	
Forward Transconductance [a]	g_{fs}	V_{DS} = 15 V, I_D = 20 A		19		S
Diode Forward Voltage [a]	V_{SD}	I_S = 25 A, V_{GS} = 0 V		0.85		V
Dynamic [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 Ω, I_D = 20 A, V_{GEN} = 10 V, R_{GEN} = 6 Ω		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 Mhz		18766		pF
Output Capacitance	C_{oss}			347		
Reverse Transfer Capacitance	C_{rss}			329		

Notes

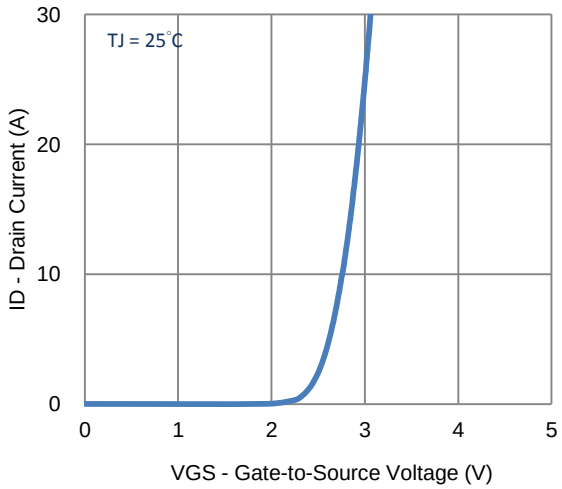
a. Pulse test: PW <= 300us duty cycle <= 2%.

b. Guaranteed by design, not subject to production testing.

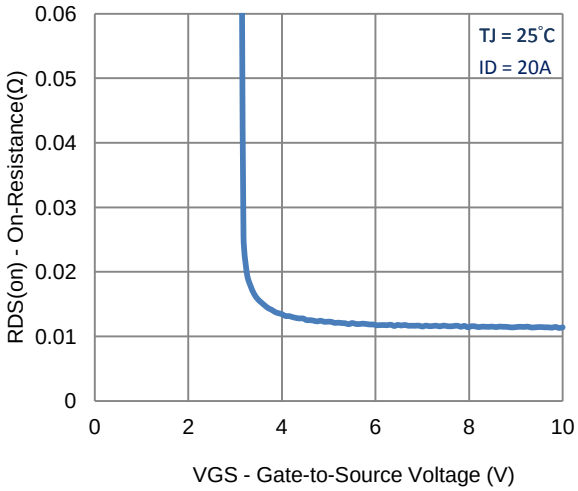
Typical Electrical Characteristics



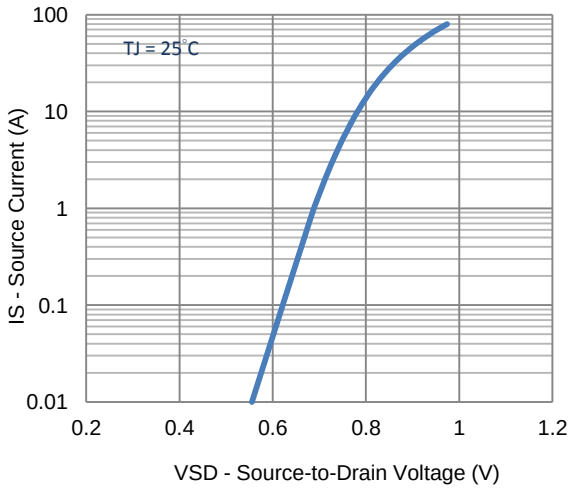
1. On-Resistance vs. Drain Current



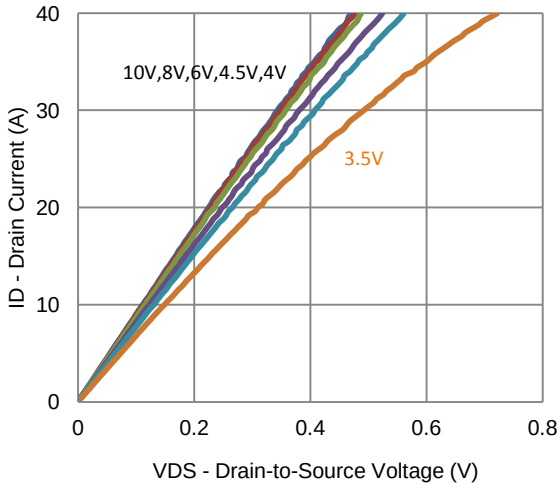
2. Transfer Characteristics



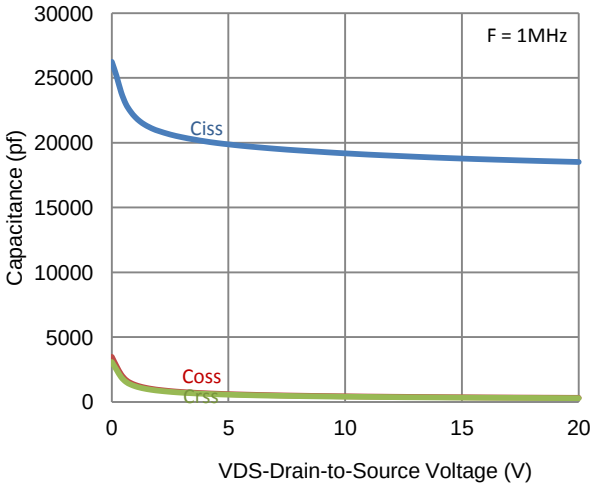
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

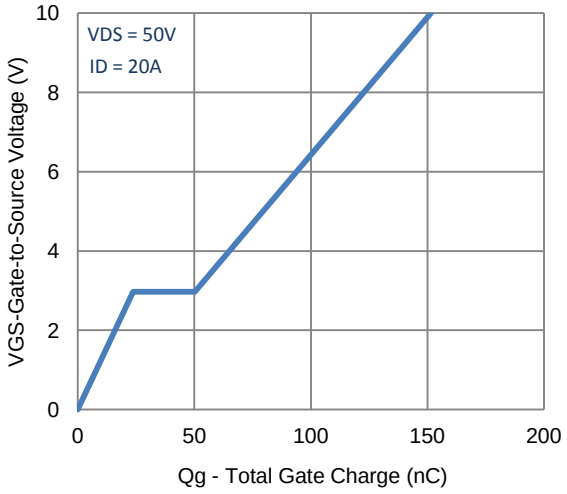


5. Output Characteristics

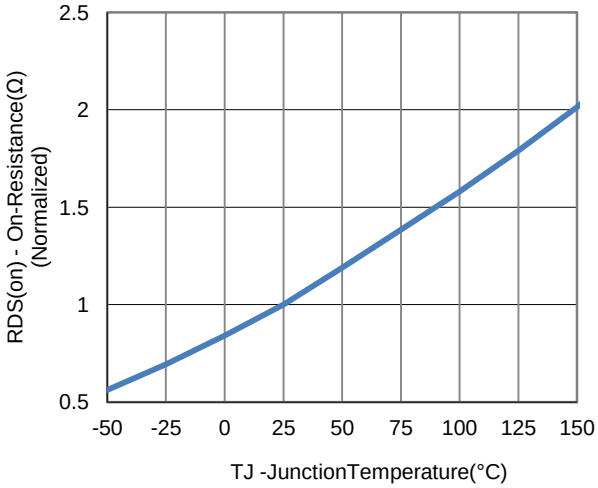


6. Capacitance

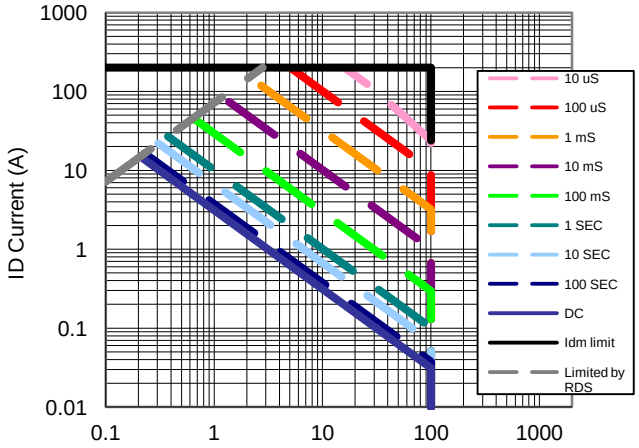
Typical Electrical Characteristics



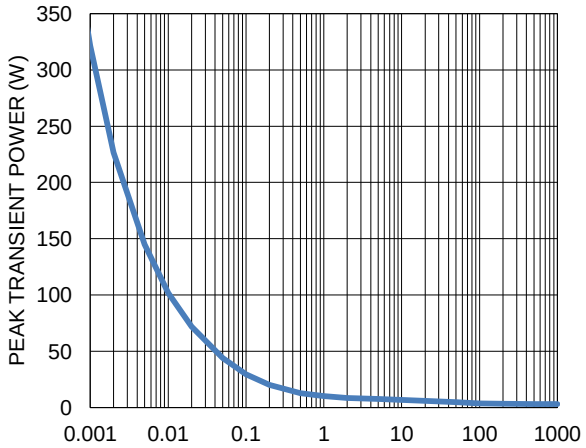
7. Gate Charge



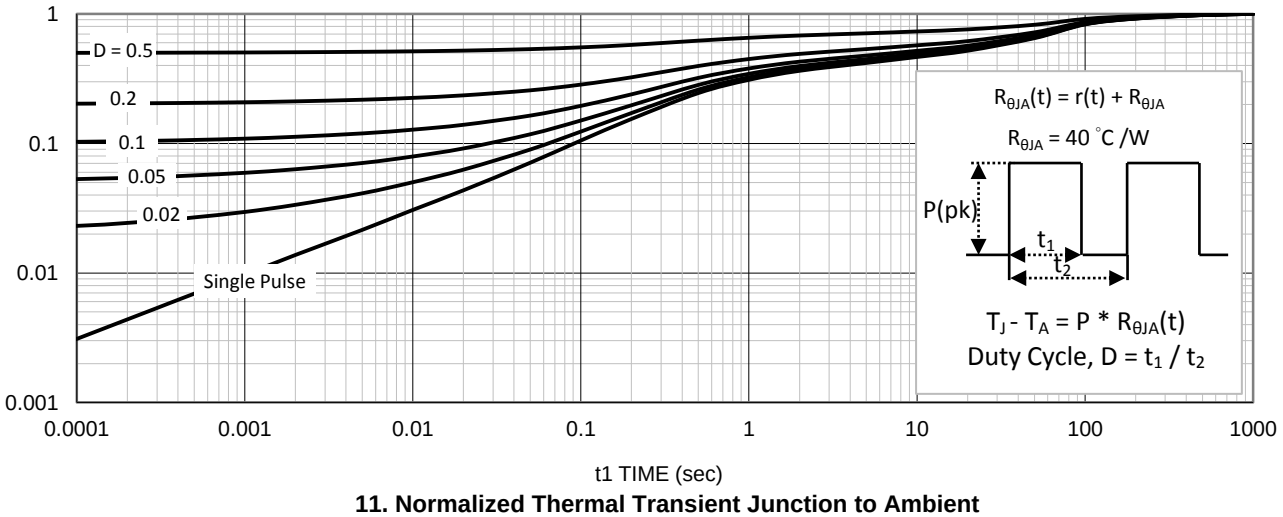
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



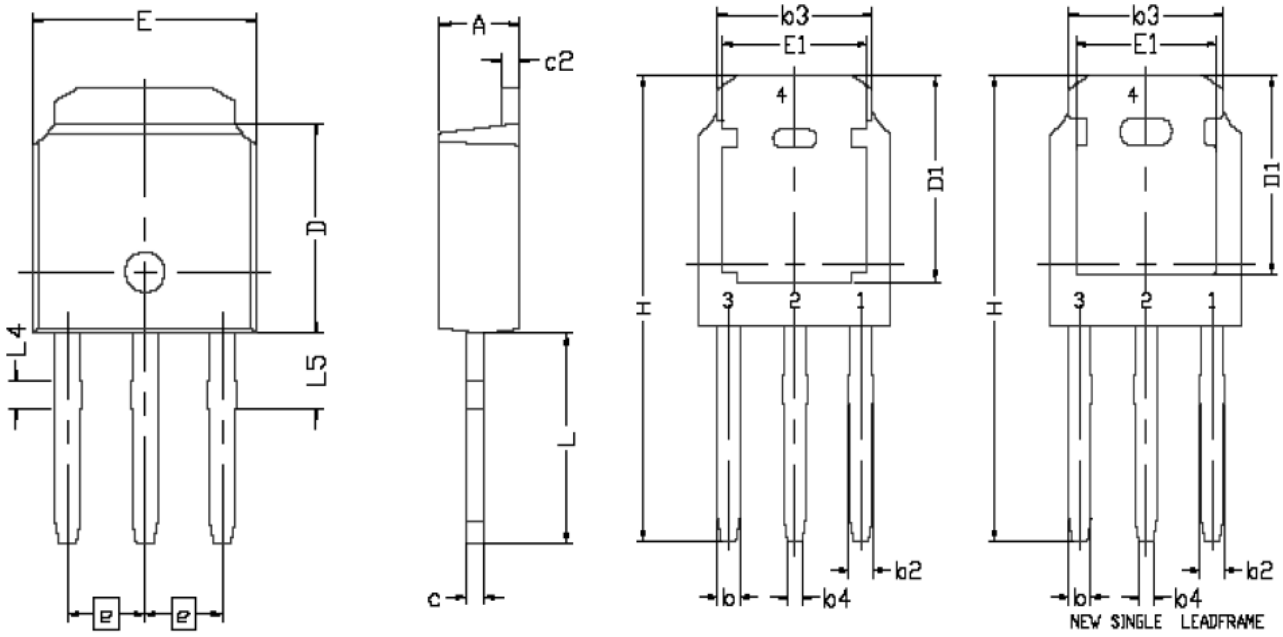
10. Single Pulse Maximum Power Dissipation



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		**2.286 BSC**	
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		