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

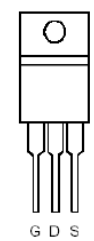
Key Features:
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

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

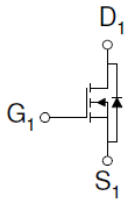
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (mΩ)	I_D(A)
60	9.9 @ V_{GS} = 10V	64[a]
	13.5 @ V_{GS} = 5.5V	

Pb-free
RoHS COMPLIANT
HALOGEN FREE

TO-220CFM



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
Parameter		**Symbol**	**Limit**	**Units**
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current [a]	T_c=25°C	I_D	64	A
Pulsed Drain Current [b]		I_{DM}	250	
Continuous Source Current (Diode Conduction) [a]		I_S	64	A
Power Dissipation [a]	T_c=25°C	P_D	60	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	

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	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} = 48 V, V_{GS} = 0 V			1	uA
		V_{DS} = 48 V, V_{GS} = 0 V, T_J = 55°C			25	
On-State Drain Current [a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	120			A
Drain-Source On-Resistance [a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 45 A			9.9	mΩ
		V_{GS} = 5.5 V, I_D = 44 A			13.5	
Forward Transconductance [a]	g_{fs}	V_{DS} = 15 V, I_D = 20 A		30		S
Diode Forward Voltage [a]	V_{SD}	I_S = 32 A, V_{GS} = 0 V		0.85		V
Dynamic [b]						
Total Gate Charge	Q_g	V_{DS} = 30 V, V_{GS} = 5.5 V, I_D = 20 A		79		nC
Gate-Source Charge	Q_{gs}			29		
Gate-Drain Charge	Q_{gd}			40		
Turn-On Delay Time	$t_{d(on)}$	V_{DS} = 30 V, R_L = 1.5 Ω, I_D = 20 A, V_{GEN} = 10 V, R_{GEN} = 6 Ω		39		ns
Rise Time	t_r			32		
Turn-Off Delay Time	$t_{d(off)}$			168		
Fall Time	t_f			34		
Input Capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz		10331		pF
Output Capacitance	C_{oss}			565		
Reverse Transfer Capacitance	C_{rss}			491		

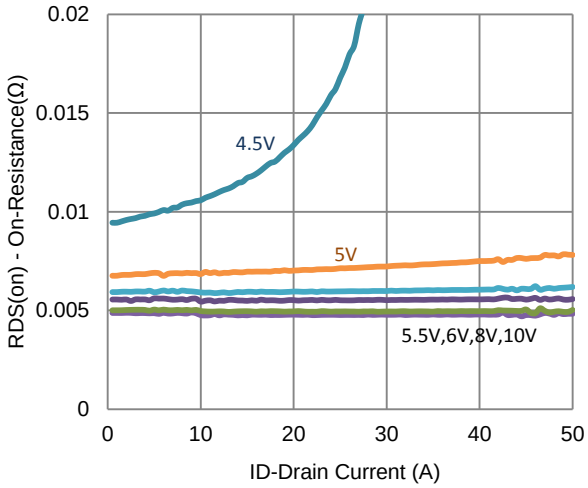
Notes

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

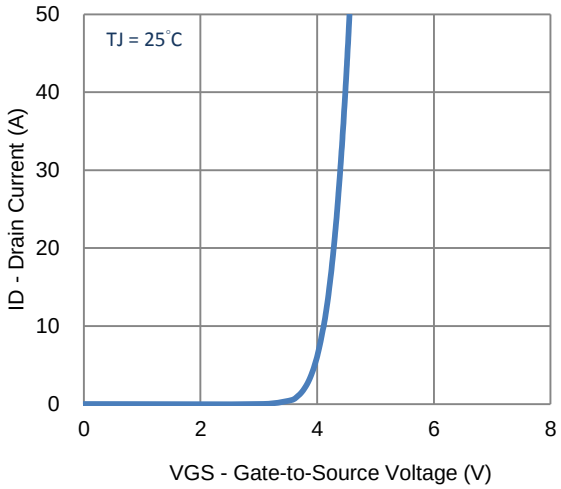
b. Guaranteed by design, not subject to production testing.

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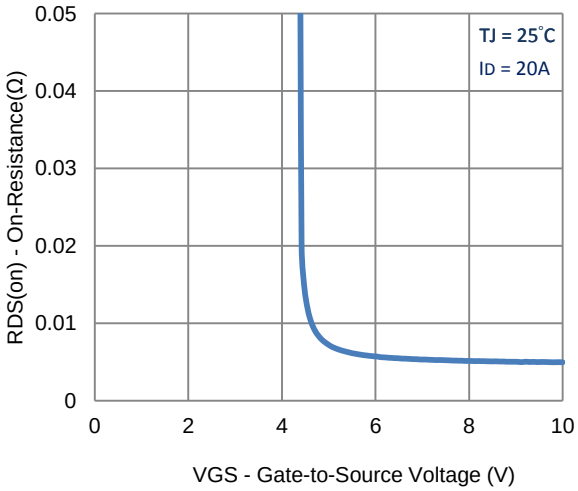
Typical Electrical Characteristics



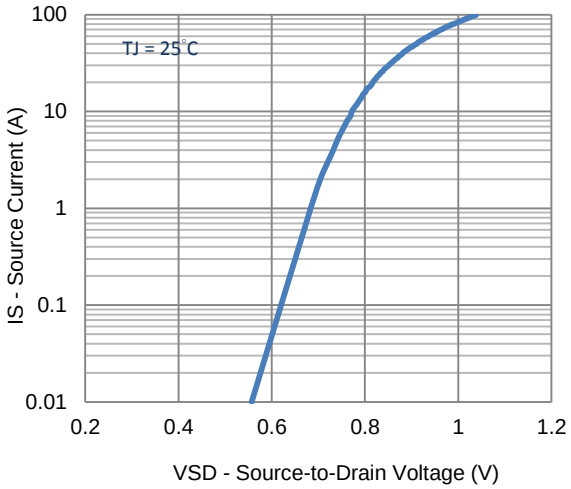
1. On-Resistance vs. Drain Current



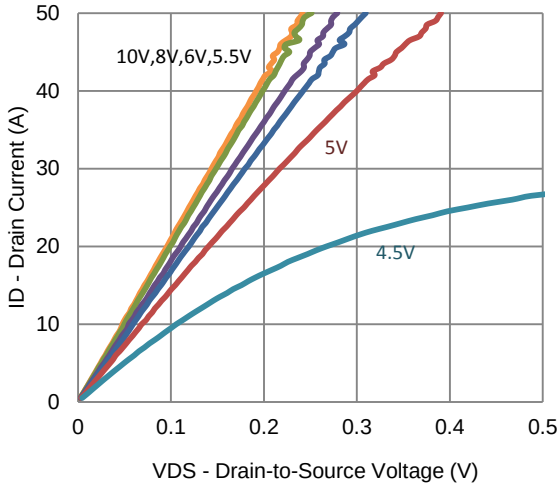
2. Transfer Characteristics



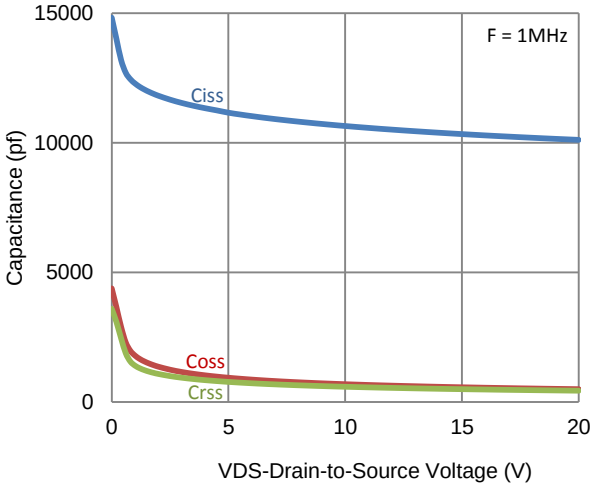
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

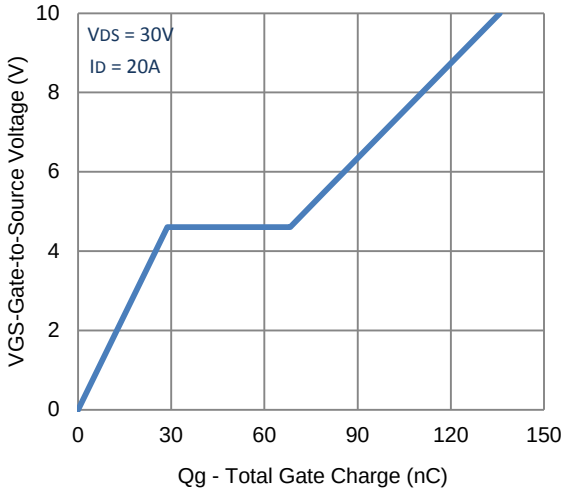


5. Output Characteristics

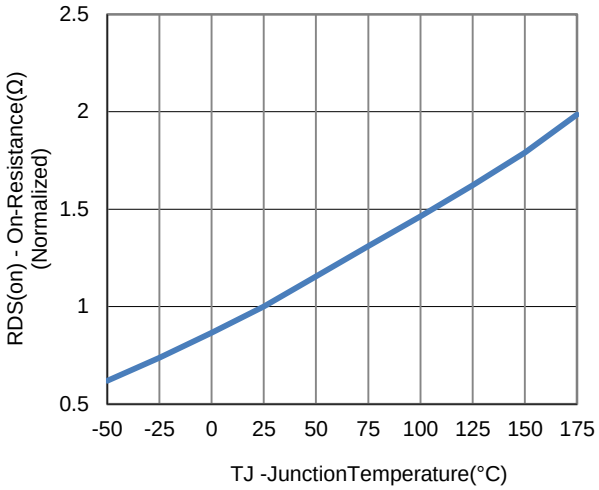


6. Capacitance

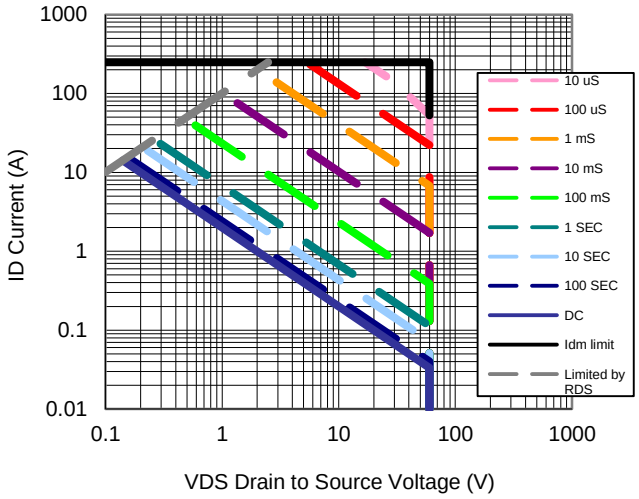
Typical Electrical Characteristics



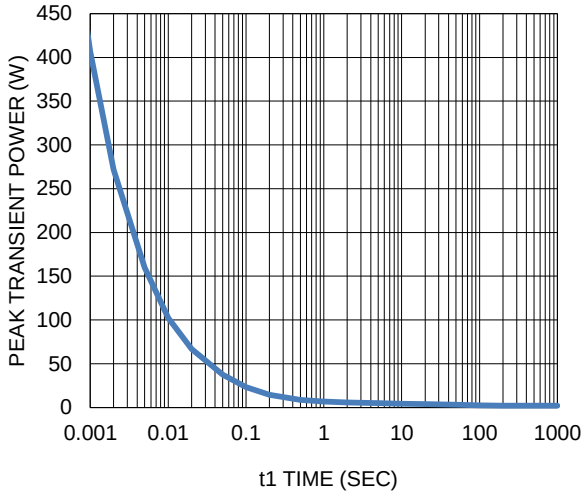
7. Gate Charge



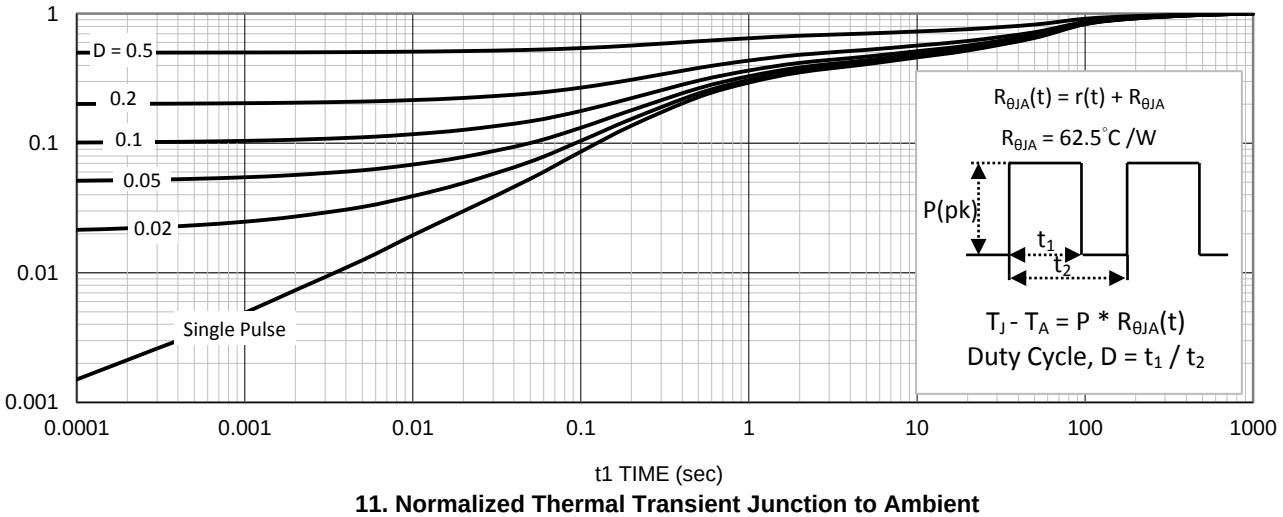
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information

