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

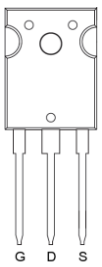
Key Features:
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

Typical Applications:
- Hot Swap Inrush Limit Circuits
- Uninterruptible Power Supplies and Inverters
- Motor Speed Controls

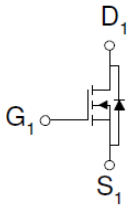
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (mΩ)	I_D (A)
100	4.6 @ V_{GS} = 10V	290[a]
	6.6 @ V_{GS} = 6.5V	

Pb-free
RoHS COMPLIANT
HALOGEN FREE

TO-247



DRAIN connected to TAB



N-Channel MOSFET

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	200	A
Pulsed Drain Current [b]		I_{DM}	500	
Continuous Source Current (Diode Conduction) [a]		I_S	200	A
Power Dissipation [a]	T_C=25°C	P_D	500	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS			
Parameter	**Symbol**	**Maximum**	**Units**
Maximum Junction-to-Ambient	$R_{\theta JA}$	40	°C/W
Maximum Junction-to-Case	$R_{\theta JC}$	0.29	

Notes

a. Silicon and thermal rating is 290A, package is rated at 200A continuous

b. Pulse width limited by maximum junction temperature

Electrical Characteristics

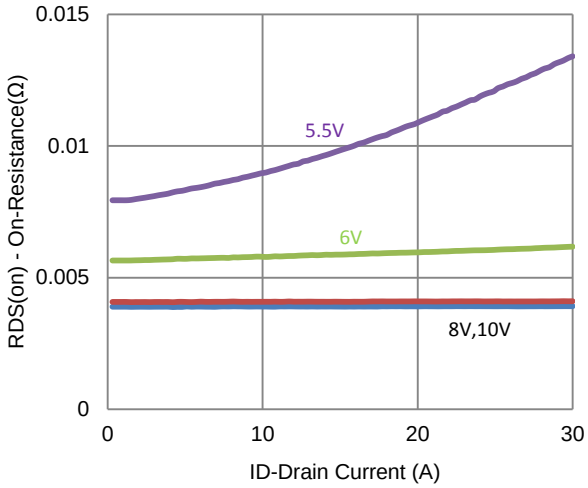
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 uA	1			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80 V, V_{GS} = 0 V			1	uA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J = 55°C			25	
On-State Drain Current [a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	420			A
Drain-Source On-Resistance [a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 50 A			4.6	mΩ
		V_{GS} = 6.5 V, I_D = 44 A			6.6	
Forward Transconductance [a]	g_{fs}	V_{DS} = 15 V, I_D = 10 A		68		S
Diode Forward Voltage [a]	V_{SD}	I_S = 50 A, V_{GS} = 0 V		0.82		V
Dynamic [b]						
Total Gate Charge	Q_g	V_{DS} = 50 V, V_{GS} = 6.5 V, I_D = 10 A		260		nC
Gate-Source Charge	Q_{gs}			58		
Gate-Drain Charge	Q_{gd}			144		
Turn-On Delay Time	$t_{d(on)}$	V_{DS} = 50 V, R_L = 5 Ω, I_D = 10 A, V_{GEN} = 10 V, R_{GEN} = 6 Ω		71		ns
Rise Time	t_r			150		
Turn-Off Delay Time	$t_{d(off)}$			401		
Fall Time	t_f			162		
Input Capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 Mhz		18470		pF
Output Capacitance	C_{oss}			1622		
Reverse Transfer Capacitance	C_{rss}			1504		

Notes

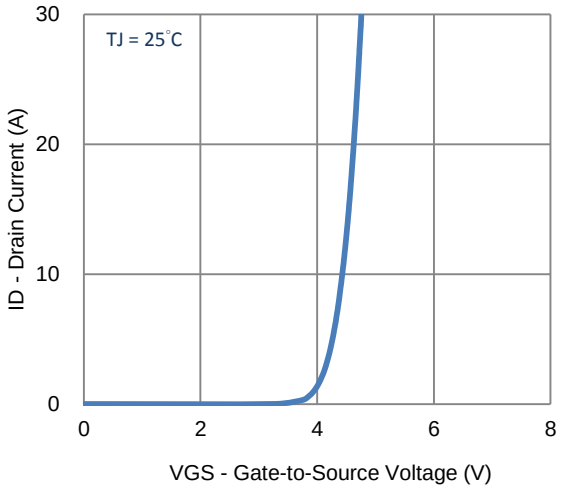
a. Pulse test: PW <= 300us duty cycle <= 2%.

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

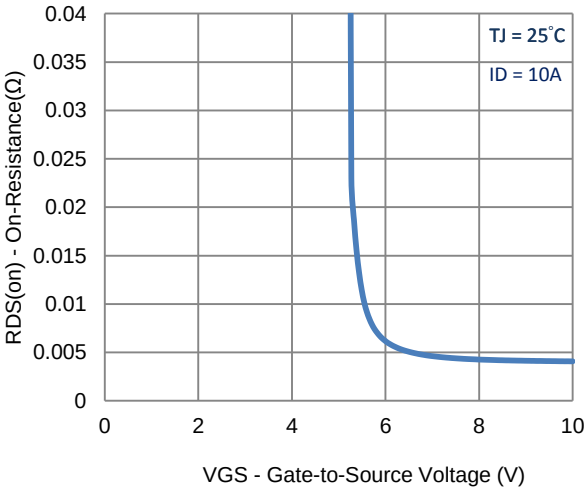
Typical Electrical Characteristics



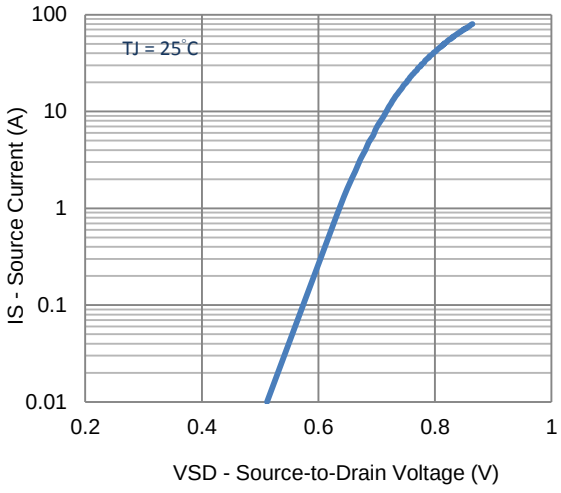
1. On-Resistance vs. Drain Current



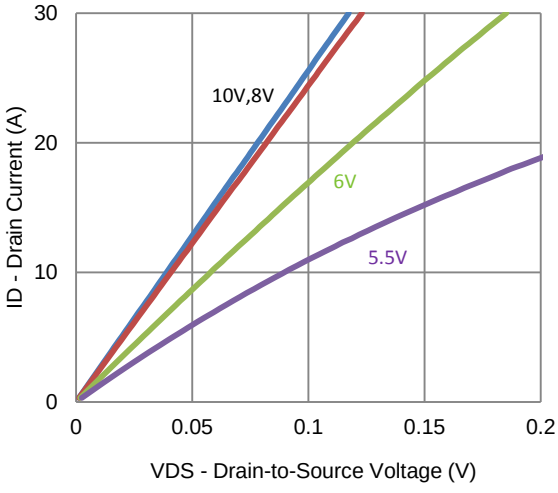
2. Transfer Characteristics



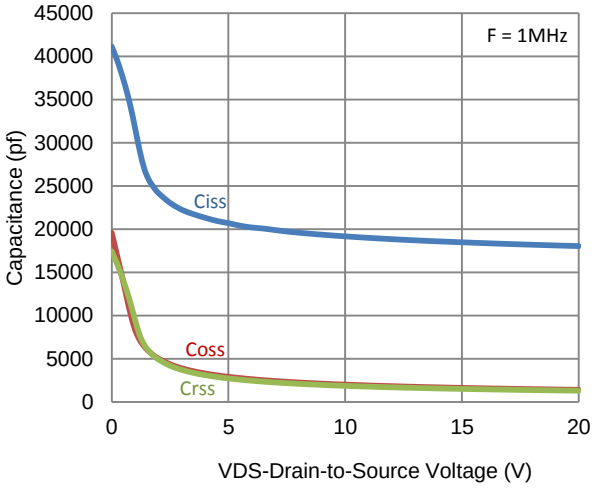
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

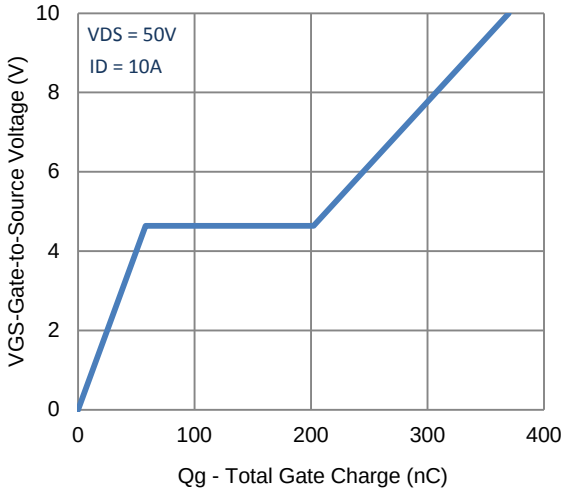


5. Output Characteristics

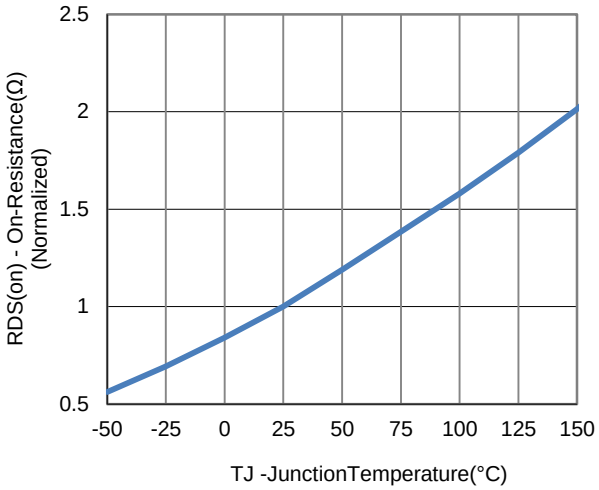


6. Capacitance

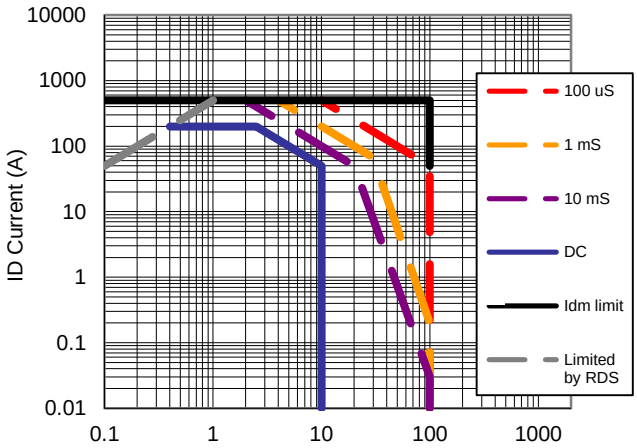
Typical Electrical Characteristics



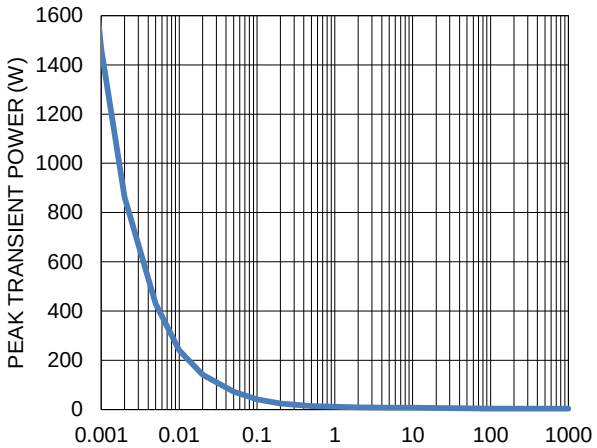
7. Gate Charge



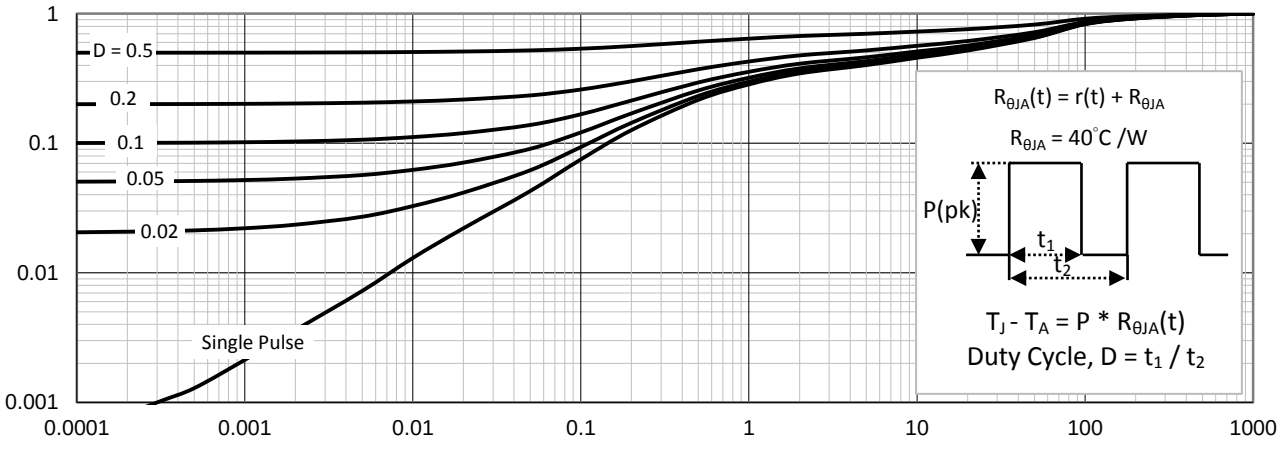
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

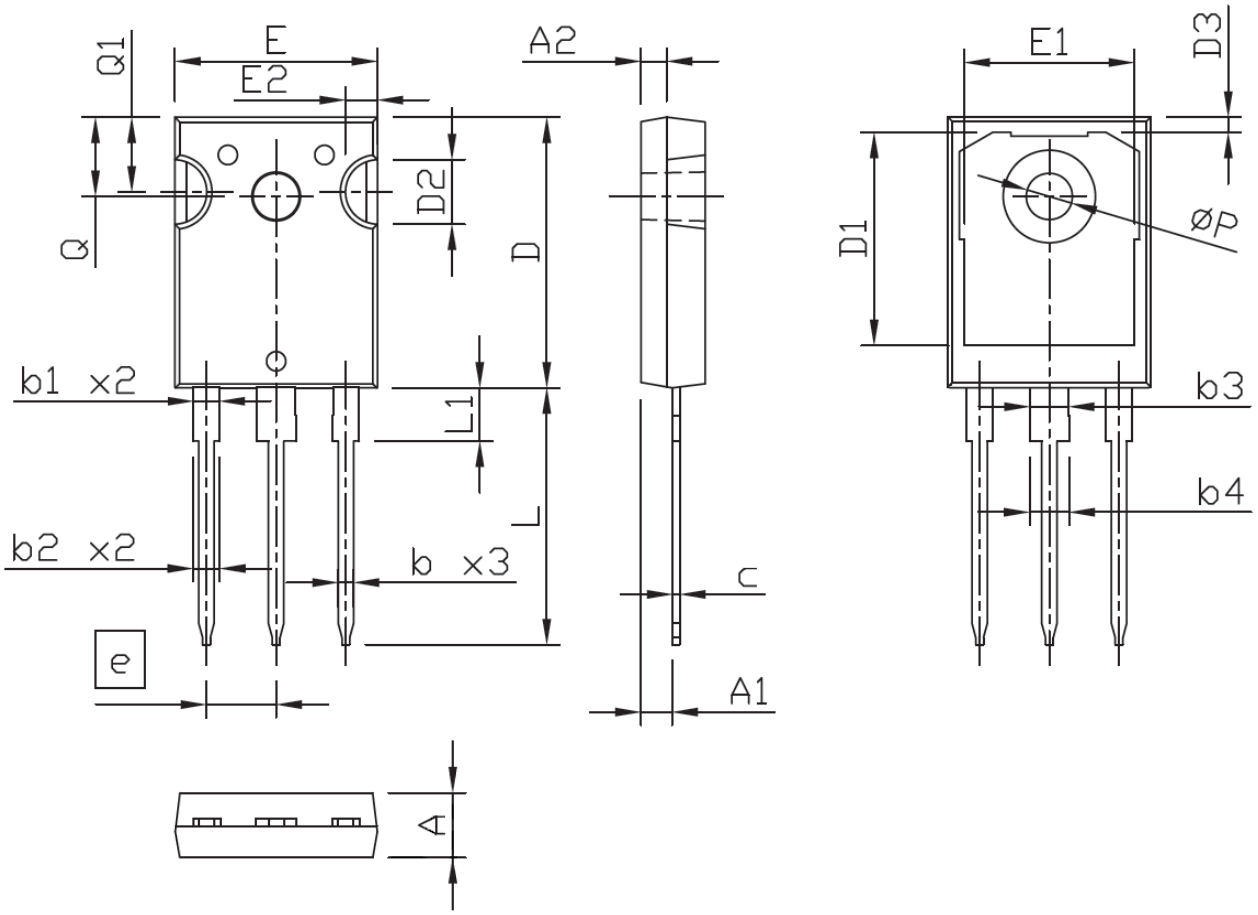


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information



SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.32	2.42	2.52
A2	1.90	2.00	2.10
b	1.17	1.22	1.27
b1	1.97	2.02	2.07
b2	2.00	2.10	2.20
b3	2.97	3.02	3.07
b4	3.00	3.10	3.20
c	0.59	0.62	0.66
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	5.00 TYP		
D3	1.05	1.20	1.35
e	5.44 BSC		
E	15.70	15.80	15.90
E1	13.06	13.26	13.46
E2	2.50 TYP		
L	19.72	19.92	20.12
L1	---	---	4.30
Q	6.15 BSC		
Q1	5.60	5.80	6.00
øP	3.55	3.60	3.65