

## P-Channel 200-V (D-S) MOSFET

### Key Features:

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

### Typical Applications:

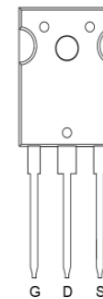
- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ (m $\Omega$ )	$I_D$ (A)
-200	260 @ $V_{GS} = -10V$	-36
	300 @ $V_{GS} = -5.5V$	-33

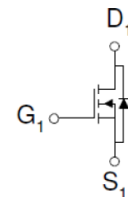


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

TO-247



DRAIN  
connected  
to TAB



N-Channel MOSFET

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Limit	Units
Drain-Source Voltage	$V_{DS}$	-200	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>a</sup>	$I_D$	-36	A
Pulsed Drain Current <sup>b</sup>			
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	-36	A
Power Dissipation <sup>a</sup>	$P_D$	500	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	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	0.29	

### Notes

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

## Electrical Characteristics

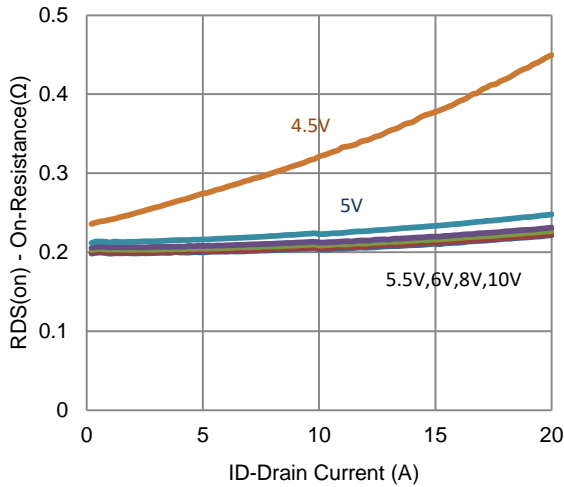
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-1			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -160 V, V_{GS} = 0 V$			-1	uA
		$V_{DS} = -160 V, V_{GS} = 0 V, T_J = 55^\circ C$			-10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} = -5 V, V_{GS} = -10 V$	-50			A
Drain-Source On-Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -10 V, I_D = -10 A$			260	m $\Omega$
		$V_{GS} = -5.5 V, I_D = -8 A$			300	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -15 V, I_D = -10 A$		16		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = -10 A, V_{GS} = 0 V$		-0.83		V
<b>Dynamic <sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -100 V, V_{GS} = -5.5 V,$ $I_D = -10 A$		67		nC
Gate-Source Charge	$Q_{gs}$			26		
Gate-Drain Charge	$Q_{gd}$			30		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = -100 V, R_L = 10 \Omega,$ $I_D = -10 A,$ $V_{GEN} = -10 V, R_{GEN} = 6 \Omega$		13		ns
Rise Time	$t_r$			25		
Turn-Off Delay Time	$t_{d(off)}$			126		
Fall Time	$t_f$			62		
Input Capacitance	$C_{iss}$	$V_{DS} = -15 V, V_{GS} = 0 V, f = 1 \text{ Mhz}$		5464		pF
Output Capacitance	$C_{oss}$			248		
Reverse Transfer Capacitance	$C_{rss}$			208		

## Notes

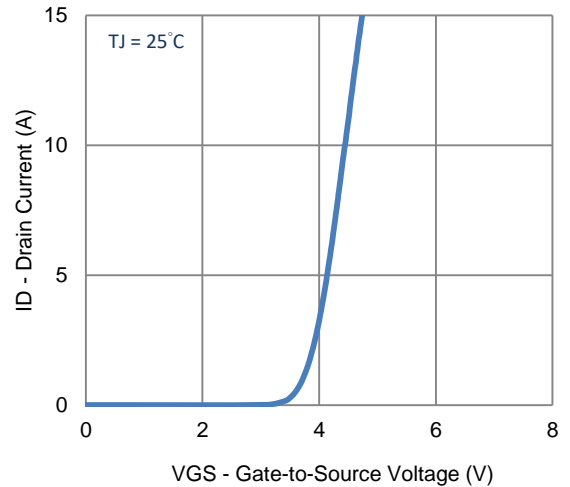
- Pulse test: PW  $\leq$  300us duty cycle  $\leq$  2%.
- Guaranteed by design, not subject to production testing.

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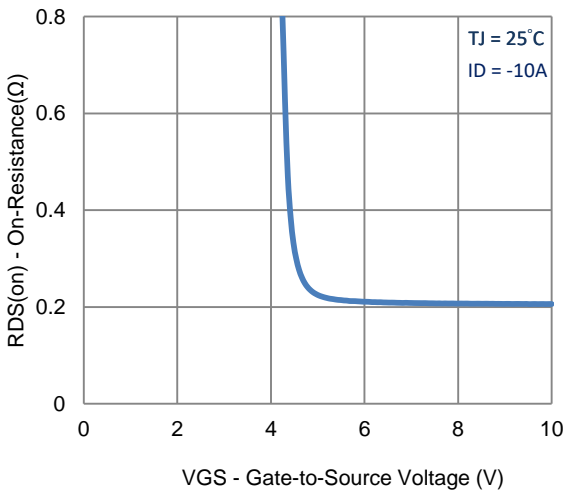
Typical Electrical Characteristics



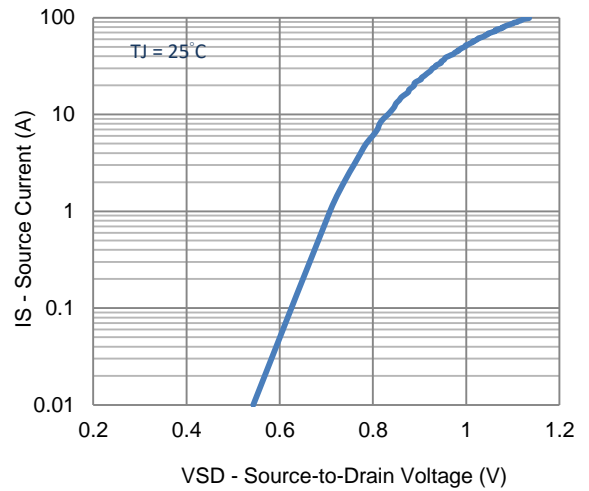
1. On-Resistance vs. Drain Current



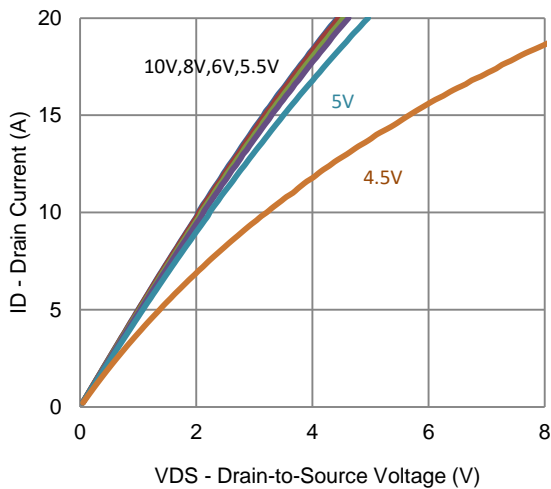
2. Transfer Characteristics



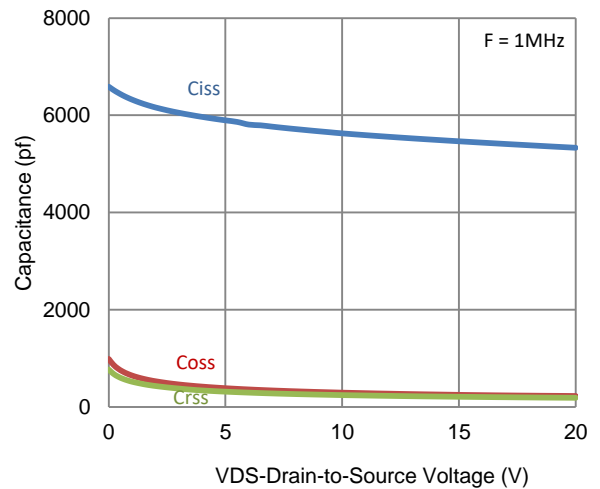
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

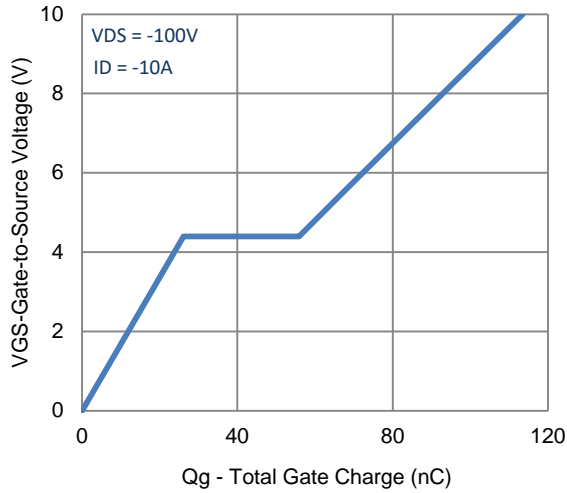


5. Output Characteristics

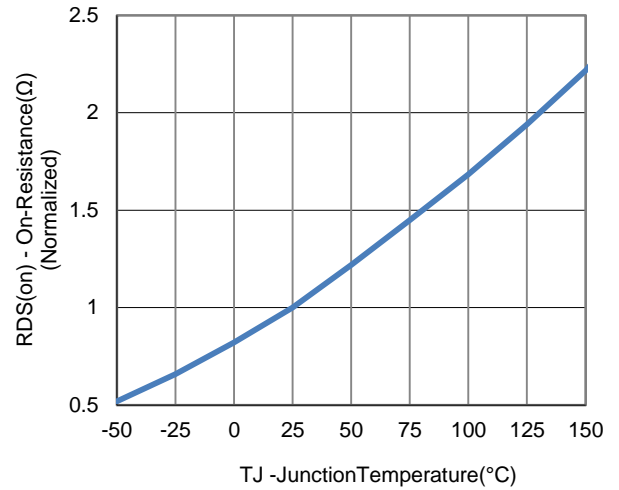


6. Capacitance

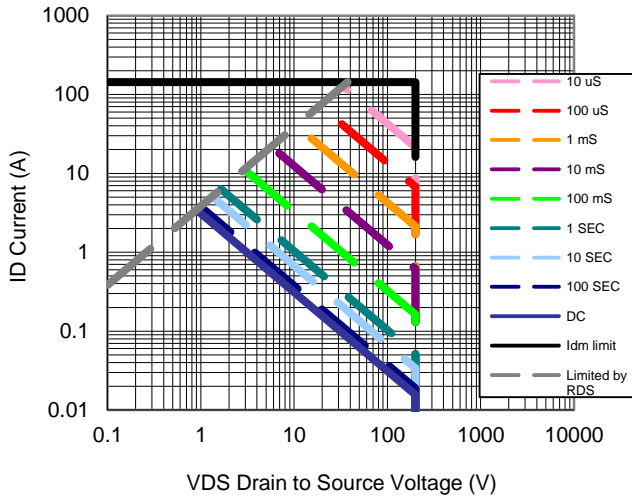
Typical Electrical Characteristics



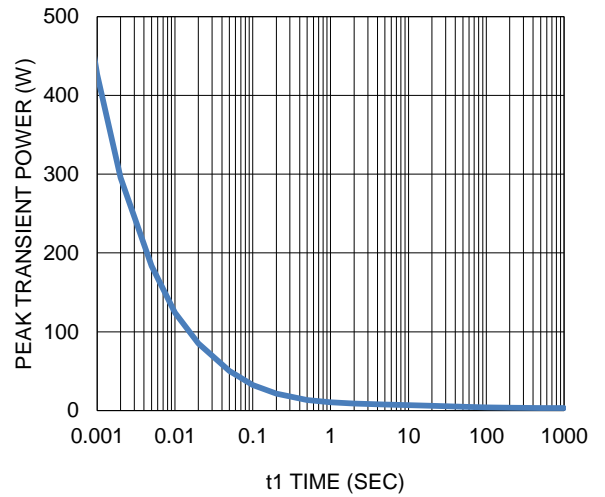
7. Gate Charge



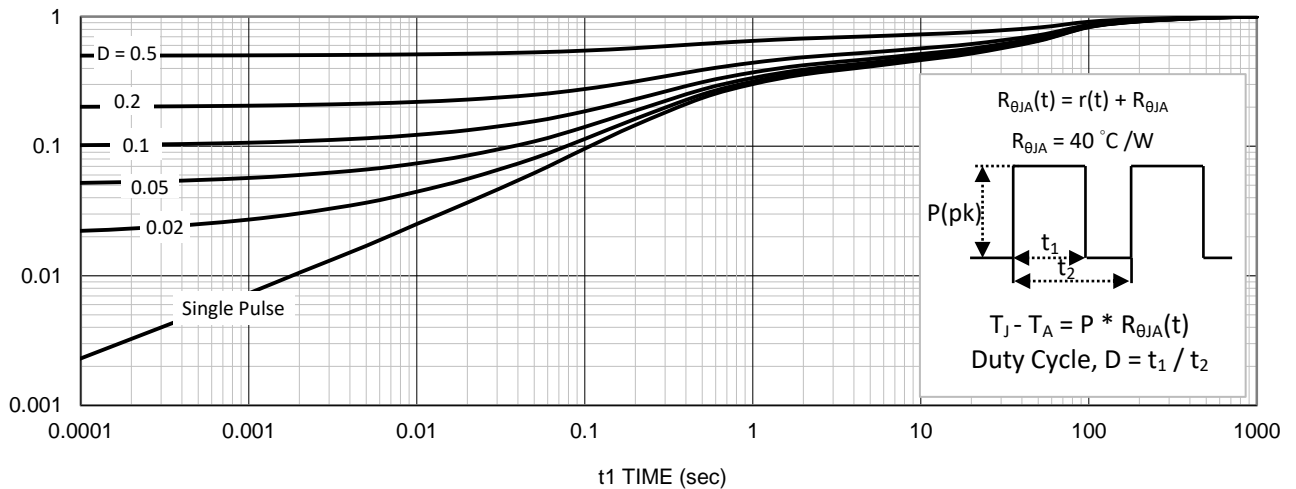
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

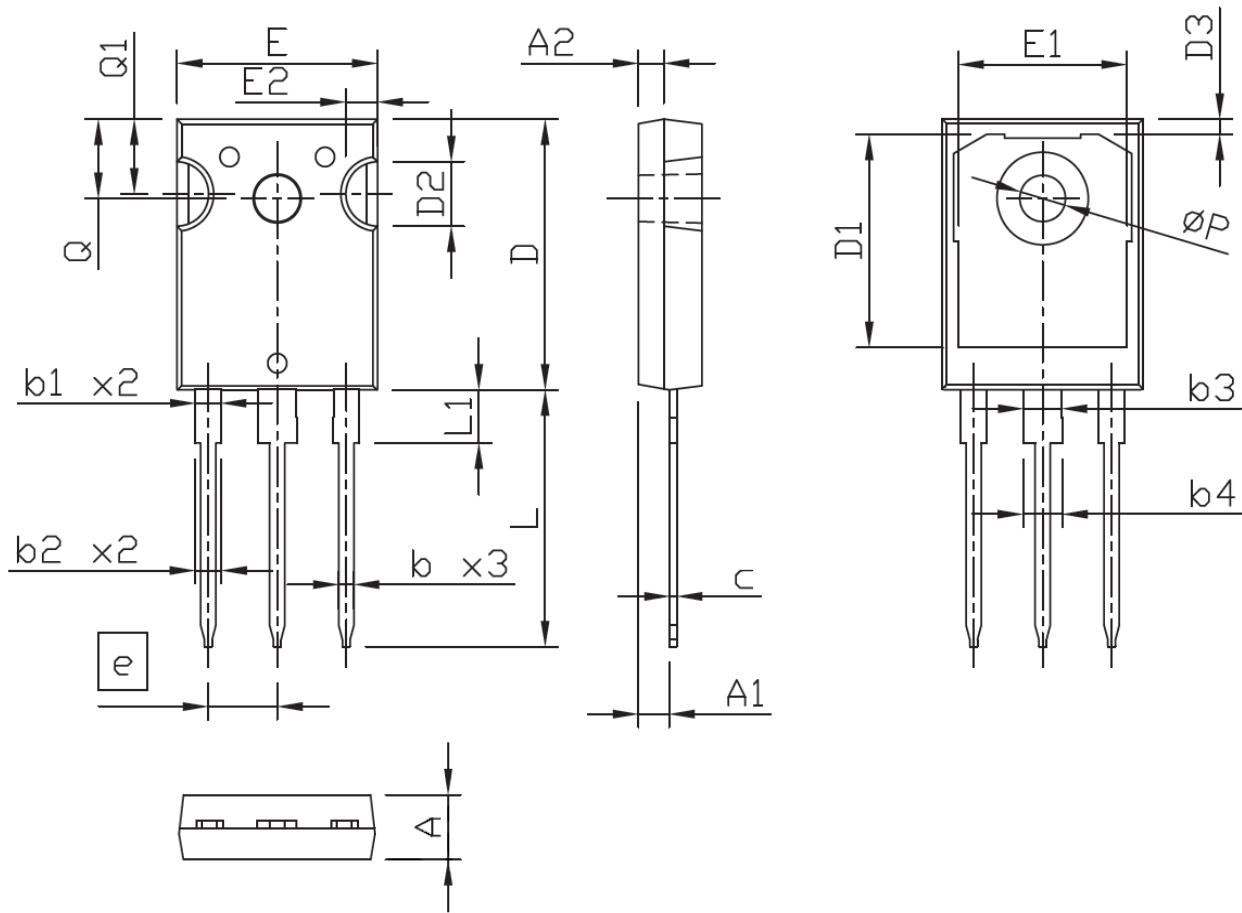


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information



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