

P-Channel 120-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 Ω)	I_D (A)
-120	42 @ $V_{GS} = -10V$	-69
	48 @ $V_{GS} = -5.5V$	-65



RoHS
COMPLIANT
HALOGEN
FREE

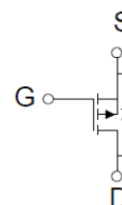
TO-220AB



G D S

Top View

DRAIN
connected
to TAB



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	-120	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ^a	$T_C = 25^\circ\text{C}$	I_D	-69	A
Pulsed Drain Current ^b		I_{DM}	-280	
Continuous Source Current (Diode Conduction) ^a	$T_C = 25^\circ\text{C}$	I_S	-69	A
Power Dissipation ^a	$T_C = 25^\circ\text{C}$	P_D	300	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 ^c	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	0.5	

Notes

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

Electrical Characteristics

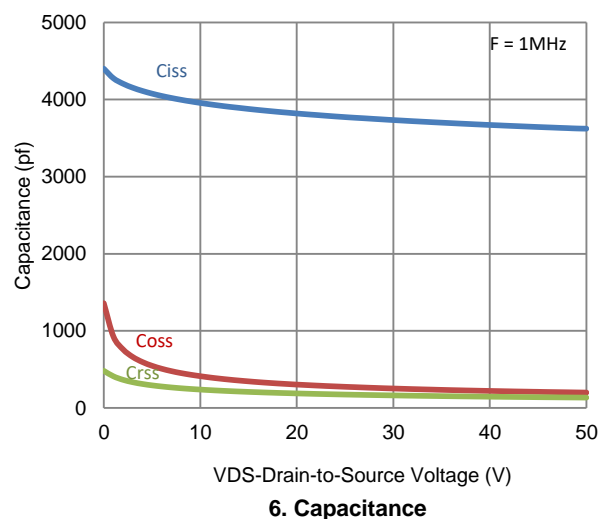
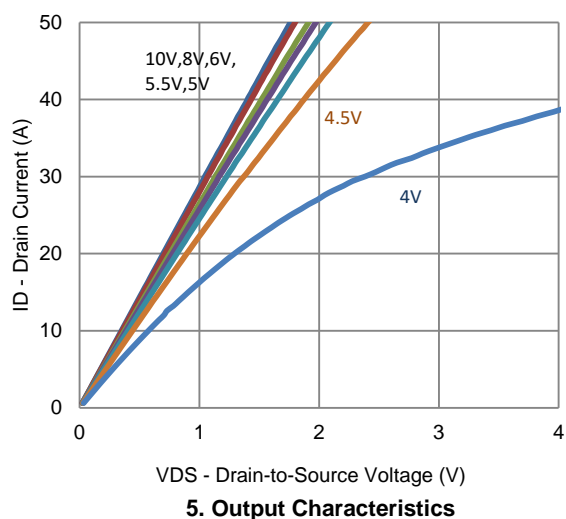
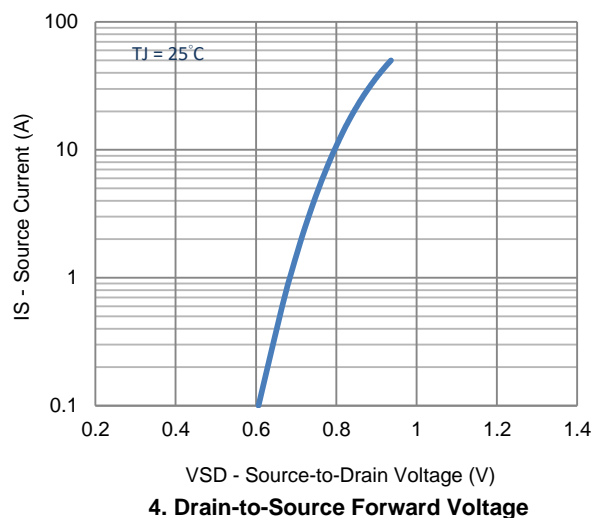
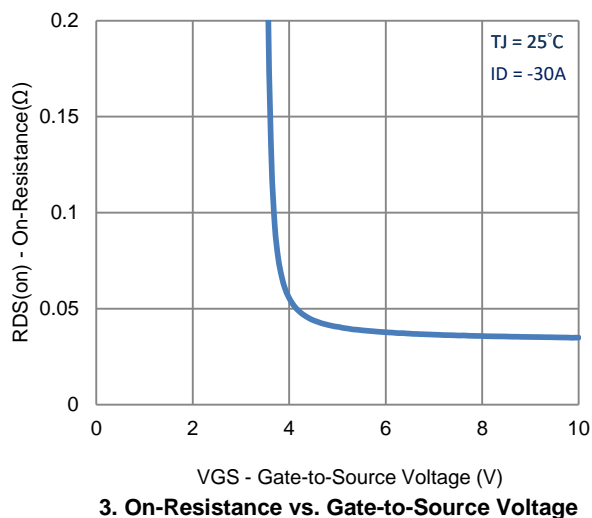
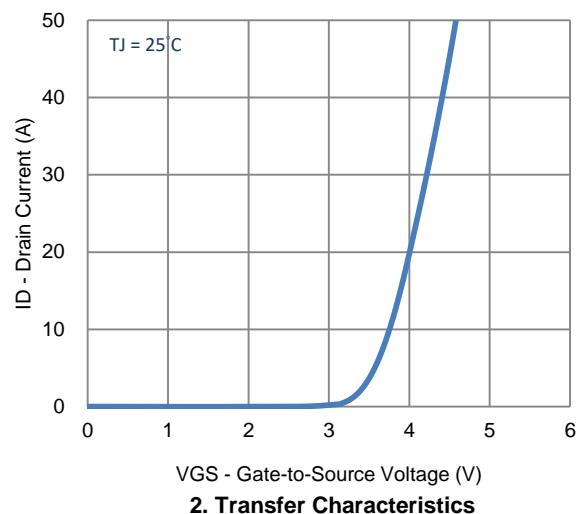
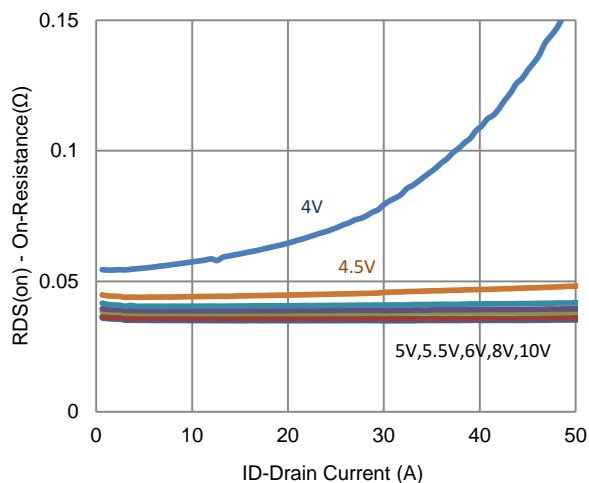
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250 \mu A$	-1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V$, $V_{GS} = \pm 20 V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -96 V$, $V_{GS} = 0 V$			-1	μA
		$V_{DS} = -96 V$, $V_{GS} = 0 V$, $T_J = 55^\circ C$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = -5 V$, $V_{GS} = -10 V$	-90			A
Drain-Source On-Resistance ^a	$r_{DS(on)}$	$V_{GS} = -10 V$, $I_D = -30 A$			42	m Ω
		$V_{GS} = -4.5 V$, $I_D = -25 A$			48	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -50 V$, $I_D = -30 A$		49		S
Diode Forward Voltage ^a	V_{SD}	$I_S = -30 A$, $V_{GS} = 0 V$		-0.88		V
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS} = -60 V$, $V_{GS} = -4.5 V$, $I_D = -30 A$		78		nC
Gate-Source Charge	Q_{gs}			24		
Gate-Drain Charge	Q_{gd}			32		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = -60 V$, $R_L = 2 \Omega$, $I_D = -30 A$, $V_{GEN} = -10 V$, $R_{GEN} = 6 \Omega$		19		ns
Rise Time	t_r			21		
Turn-Off Delay Time	$t_{d(off)}$			117		
Fall Time	t_f			62		
Input Capacitance	C_{iss}	$V_{DS} = -50 V$, $V_{GS} = 0 V$, $f = 1 Mhz$		3622		pF
Output Capacitance	C_{oss}			199		
Reverse Transfer Capacitance	C_{rss}			134		

Notes

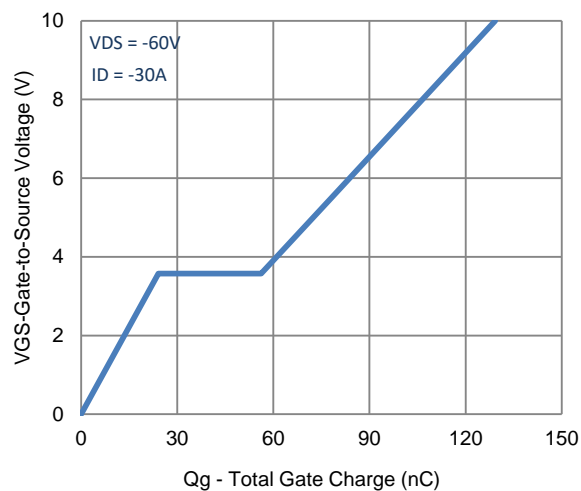
- Pulse test: PW \leq 300us duty cycle \leq 2%.
- Guaranteed by design, not subject to production testing.

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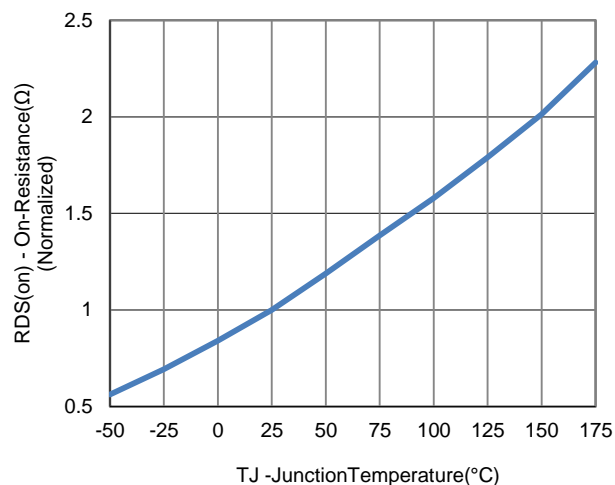
Typical Electrical Characteristics



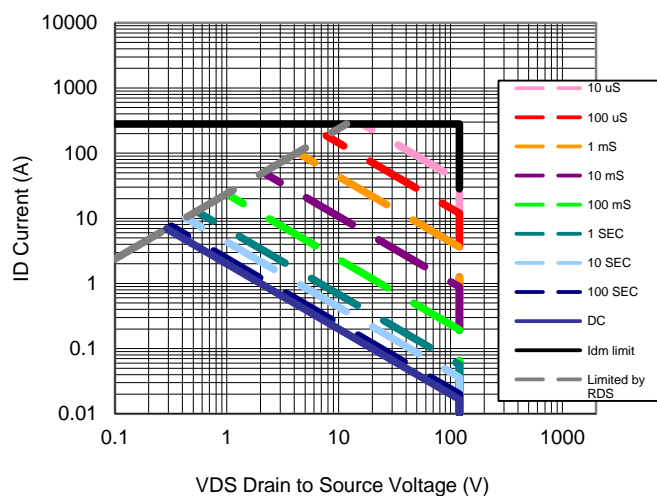
Typical Electrical Characteristics



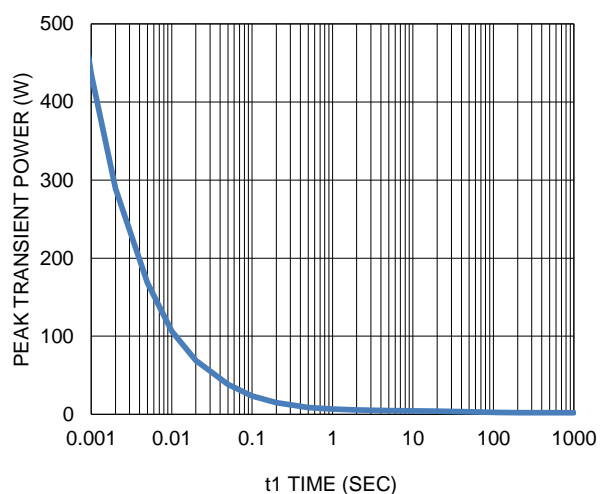
7. Gate Charge



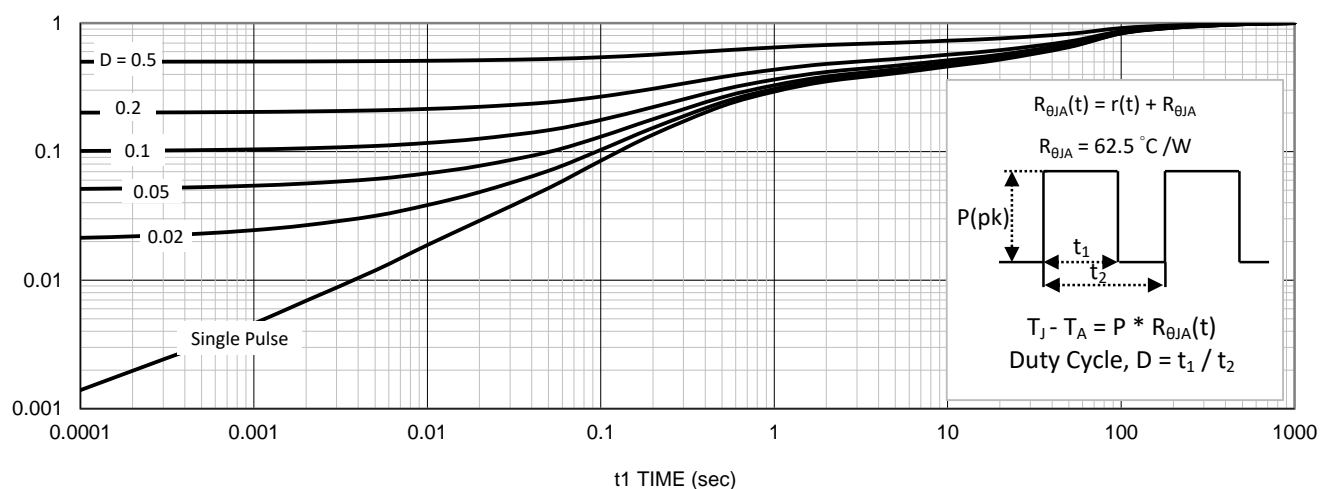
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

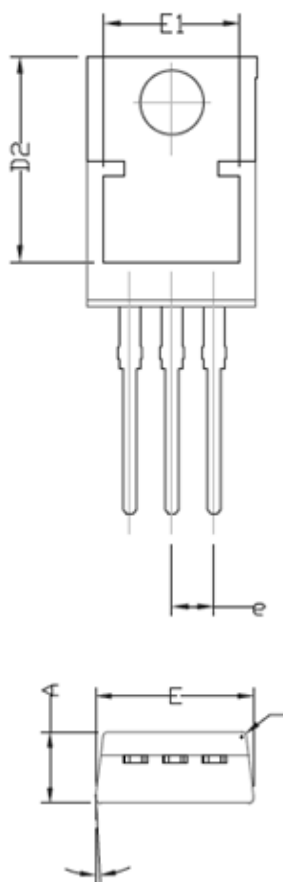
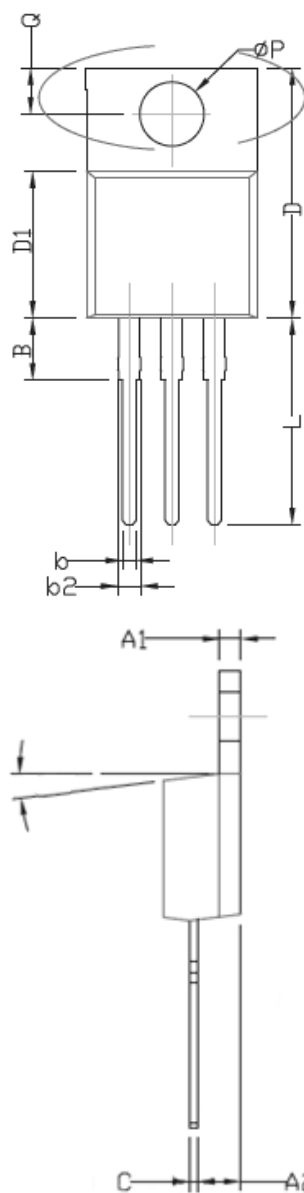


10. Single Pulse Maximum Power Dissipation

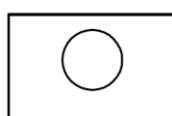


11. Normalized Thermal Transient Junction to Ambient

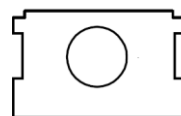
Package Information



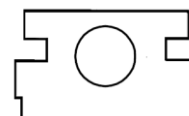
DIM.	MILLIMETERS	
	MIN	MAX
A	4.24	4.72
A1	1.11	1.41
A2	2.22	2.7
B	2.6	3.9
b	0.66	0.94
b2	1.17	1.45
c	0.4	0.6
D	14.5	15.74
D1	8.4	9.65
D2	12.08	12.48
E	9.7	10.54
E1	8	8.4
e	2.49	2.59
L	12.27	14.5
ØP	3.55	3.89
Q	2.58	2.98



Option 1



Option 2



Option 3

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