

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

Key Features:

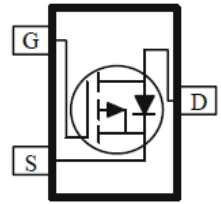
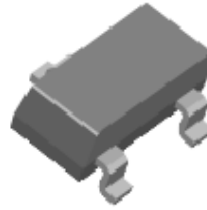
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

Typical Applications:

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



RoHS
COMPLIANT
HALOGEN
FREE



PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
-60	381 @ $V_{GS} = -10V$	-1.6
	561 @ $V_{GS} = -4.5V$	-1.3

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

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	-1.6	A
	$T_A = 70^\circ\text{C}$		-1.2	
Pulsed Drain Current ^b		I_{DM}	-1.6	A
Continuous Source Current (Diode Conduction) ^a		I_S	-10	
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	1.3	W
	$T_A = 70^\circ\text{C}$		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 10 \text{ sec}$	$R_{\theta JA}$	100	$^\circ\text{C/W}$
	Steady State		166	

Notes

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

Electrical Characteristics

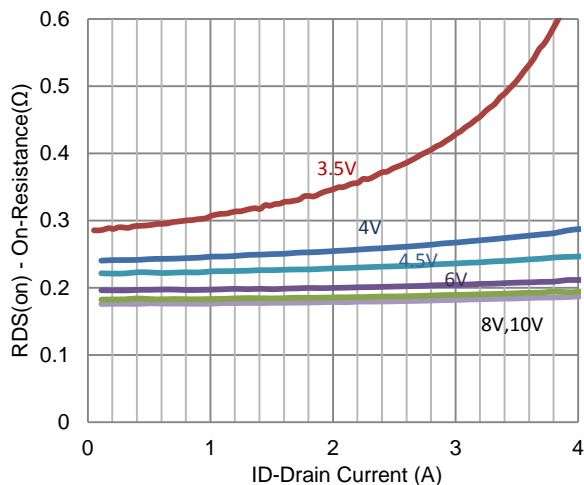
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -48 V, V_{GS} = 0 V$			-1	μA
		$V_{DS} = -48 V, V_{GS} = 0 V, T_J = 55^\circ C$			-10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	-5			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = -10 V, I_D = -1.3 A$			381	m Ω
		$V_{GS} = -4.5 V, I_D = -1.1 A$			561	
Forward Transconductance	g_{fs}	$V_{DS} = -15 V, I_D = -1.3 A$		10		S
Diode Forward Voltage	V_{SD}	$I_S = -0.8 A, V_{GS} = 0 V$		0.83		V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = -30 V, V_{GS} = -4.5 V,$ $I_D = -1.3 A$		5		nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			2.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = -30 V, R_L = 23.1 \Omega,$ $I_D = -1.3 A,$ $V_{GEN} = -10 V, R_{GEN} = 6 \Omega$		7		ns
Rise Time	t_r			5		
Turn-Off Delay Time	$t_{d(off)}$			24		
Fall Time	t_f			6		
Input Capacitance	C_{iss}	$V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz$		371		pF
Output Capacitance	C_{oss}			31		
Reverse Transfer Capacitance	C_{rss}			26		

Notes

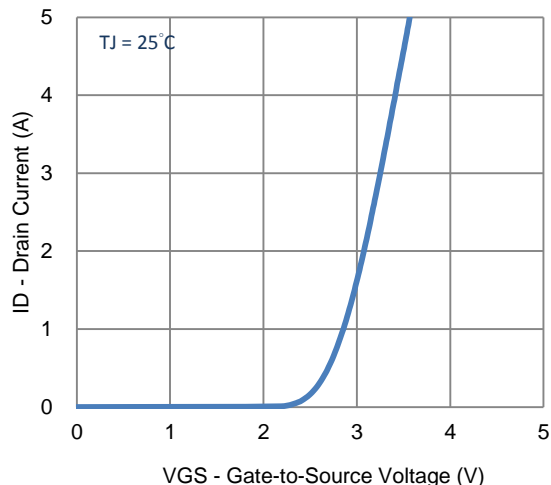
- Pulse test: $PW \leq 300 \mu s$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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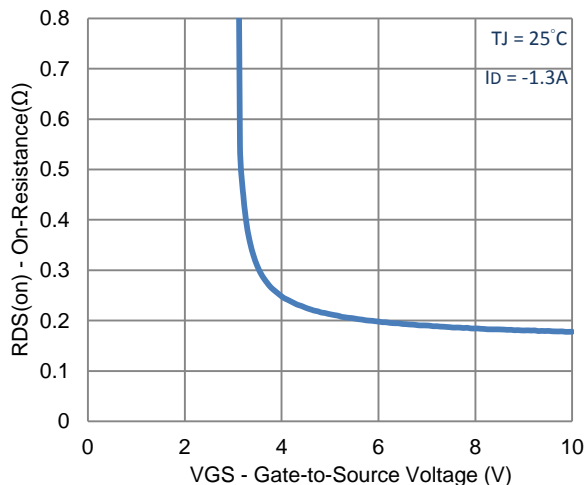
Typical Electrical Characteristics



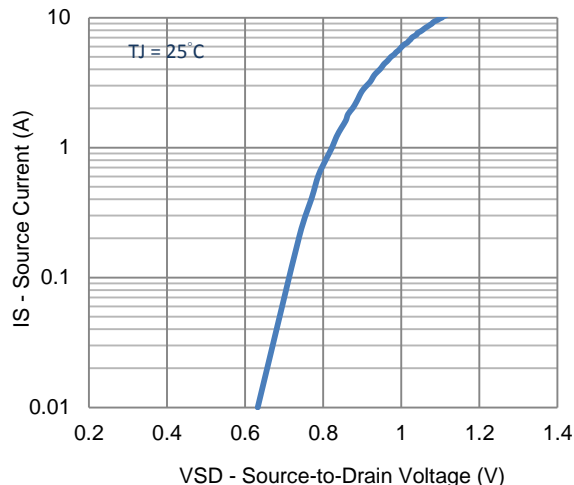
1. On-Resistance vs. Drain Current



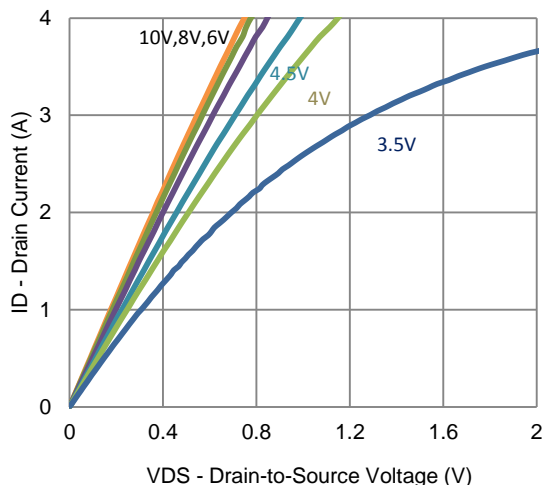
2. Transfer Characteristics



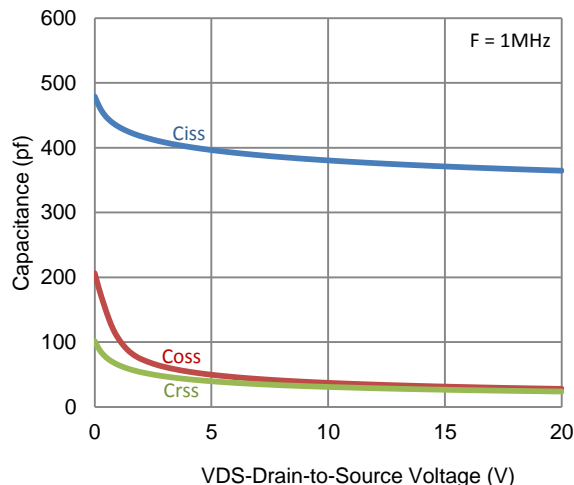
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

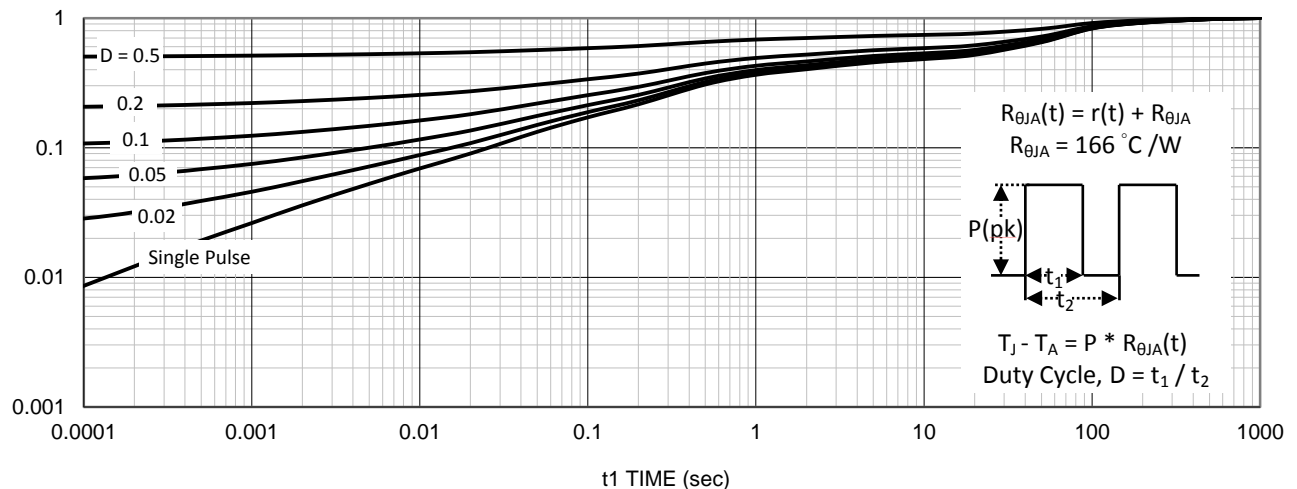
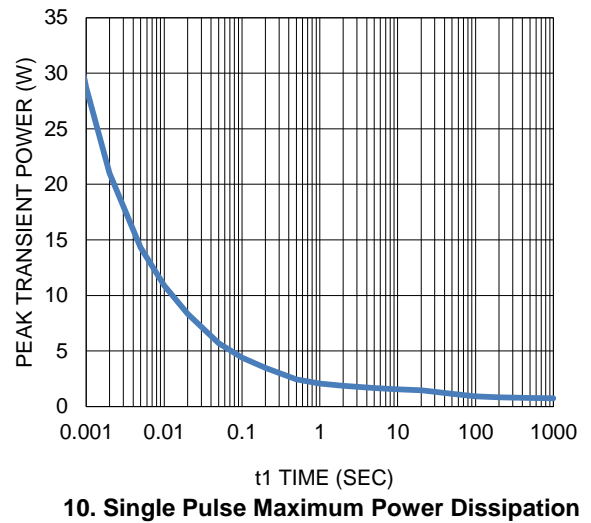
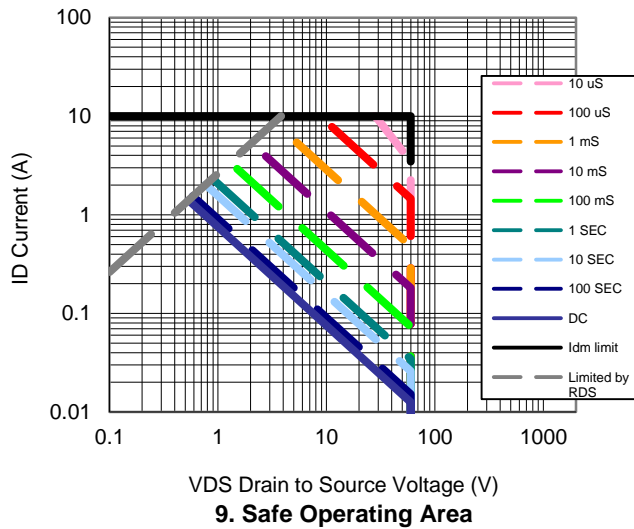
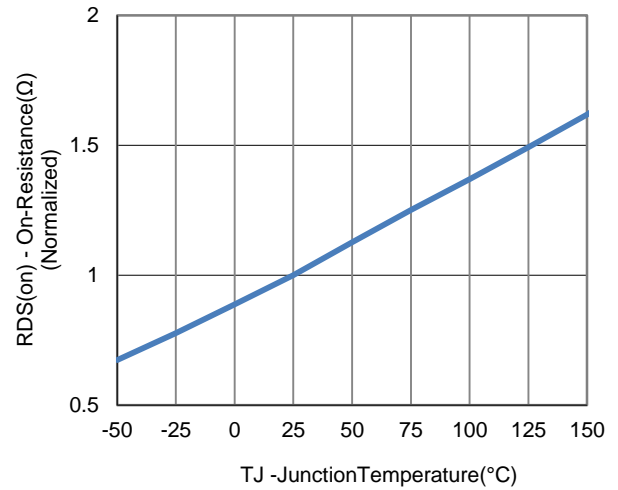
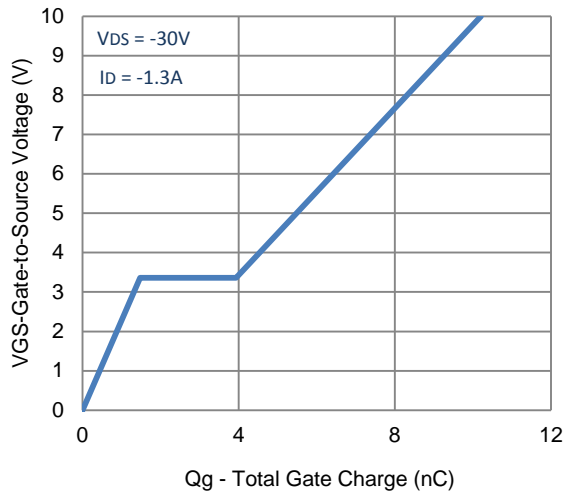


5. Output Characteristics

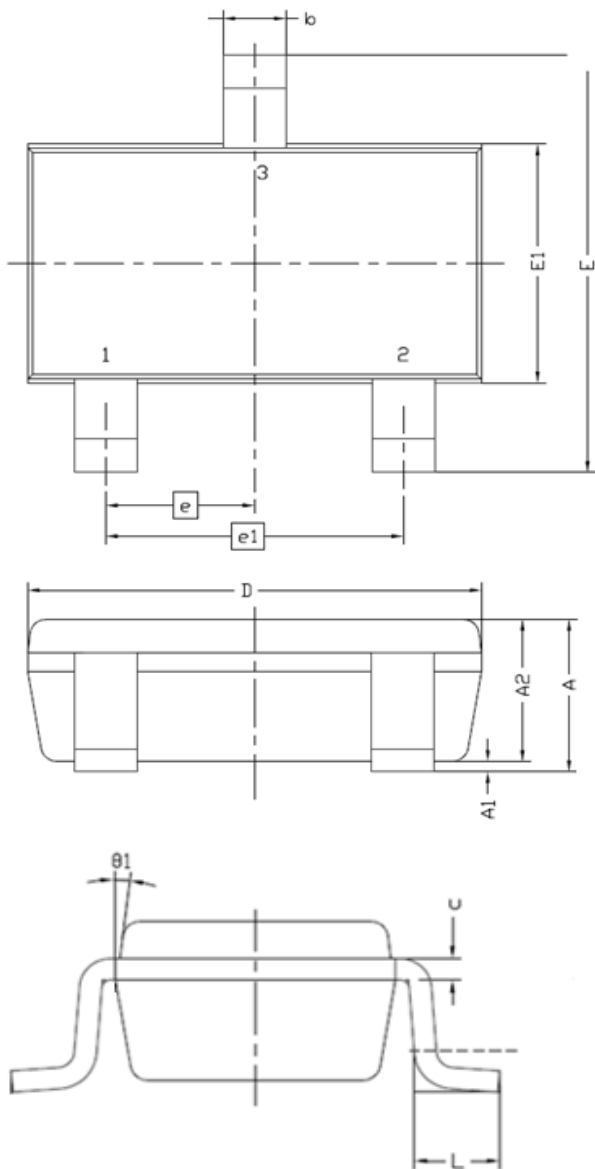


6. Capacitance

Typical Electrical Characteristics

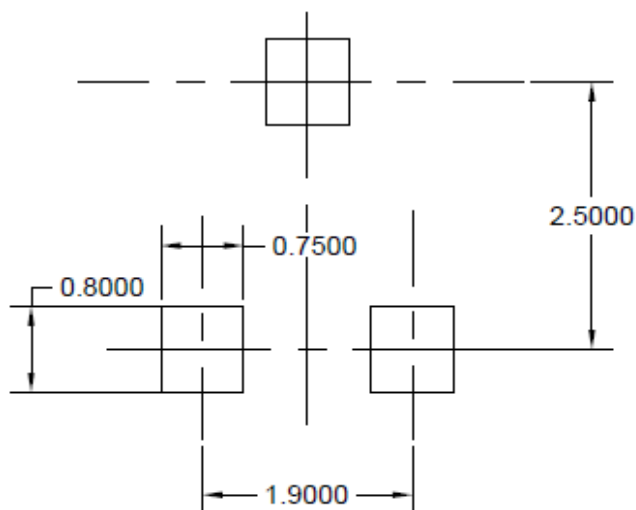


Package Information



Symbol	MILLIMETERS	
	MIN	MAX
A	0.8	1.2
A1	0	0.1
A2	0.7	1.1
b	0.3	0.5
c	0.1	0.2
D	2.7	3.1
E	2.6	3
E1	1.4	1.8
e	0.95 BSC	
e1	1.9 BSC	
L	0.3	0.6
θ1	7° NOM	

Recommended Pad Layout



Note: Drain opening is recommended to be solder mask defined in a copper fill for improved thermal performance

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