

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

Key Features:

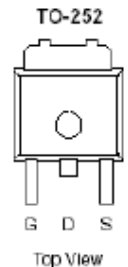
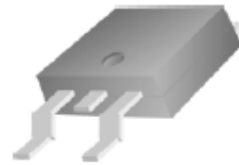
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

Typical Applications:

- PoE Power Sourcing Equipment
- PoE Powered Devices
- Telecom DC/DC converters
- White LED boost converters



RoHS
COMPLIANT
HALOGEN
FREE



PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
100	78 @ $V_{GS} = 10V$	26
	92 @ $V_{GS} = 4.5V$	25

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

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	26	A
Pulsed Drain Current ^b	I_{DM}	100	
Continuous Source Current (Diode Conduction)	I_S	30	A
Power Dissipation	P_D	100	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 175	$^\circ C$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	40	$^\circ C/W$
Maximum Junction-to-Case	$R_{\theta JC}$	1.5	

Notes

- Surface Mounted on 1" x 1" FR4 Board, drain pad using 2 oz copper, value dependent on PC board thermal characteristics
- Pulse width limited by maximum junction temperature

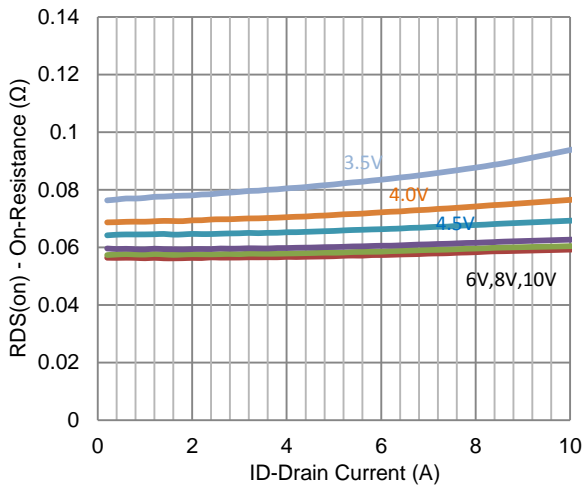
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = 20 V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 80 V, V_{GS} = 0 V$			1	uA
		$V_{DS} = 80 V, V_{GS} = 0 V, T_J = 55^\circ C$			25	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	34			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = 10 V, I_D = 9.2 A$			78	m Ω
		$V_{GS} = 4.5 V, I_D = 6.1 A$			92	
Forward Transconductance	g_{fs}	$V_{DS} = 40 V, I_D = 5.5 A$		20		S
Diode Forward Voltage	V_{SD}	$I_S = 9 A, V_{GS} = 0 V$		0.8		V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = 50 V, V_{GS} = 4.5 V, I_D = 9 A$		21		nC
Gate-Source Charge	Q_{gs}			3.8		
Gate-Drain Charge	Q_{gd}			14.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 50 V, R_L = 5.2 \Omega, I_D = 9.6 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$		7.5		ns
Rise Time	t_r			13.6		
Turn-Off Delay Time	$t_{d(off)}$			41		
Fall-Time	t_f			35		
Input Capacitance	C_{iss}	$V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz$		990		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			77		

Notes

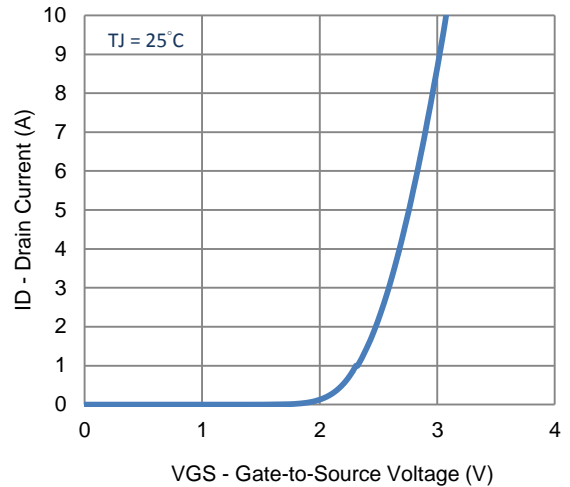
- Pulse test: $PW \leq 300 \mu s$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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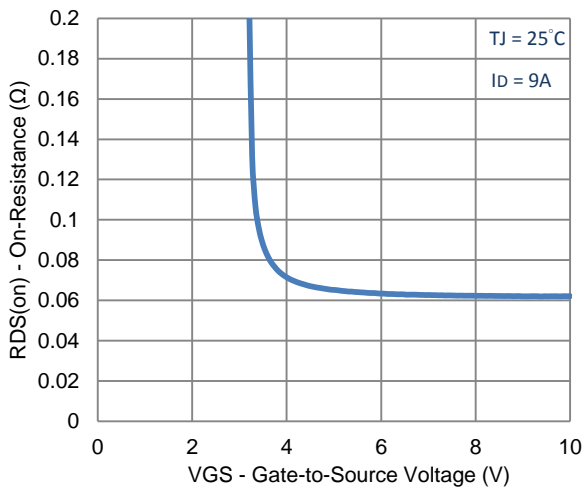
Typical Electrical Characteristics



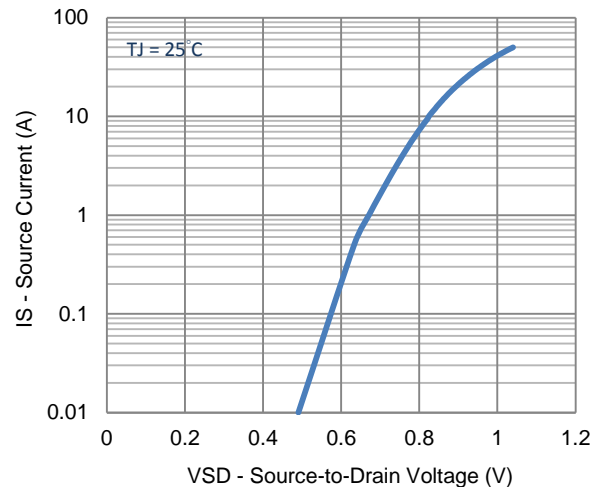
1. On-Resistance vs. Drain Current



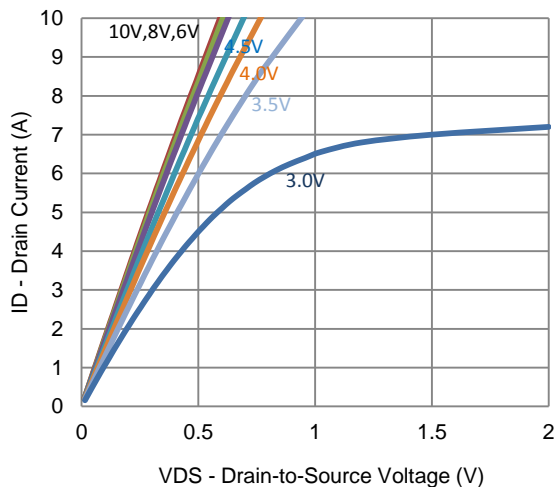
2. Transfer Characteristics



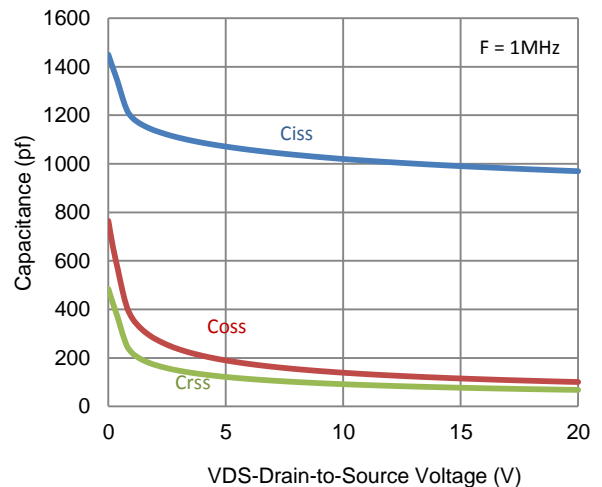
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

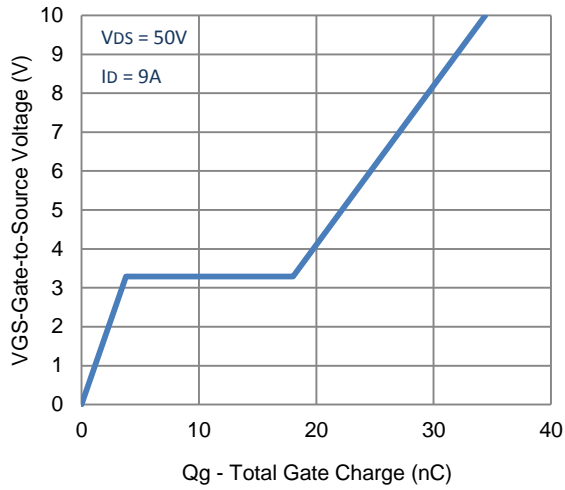


5. Output Characteristics

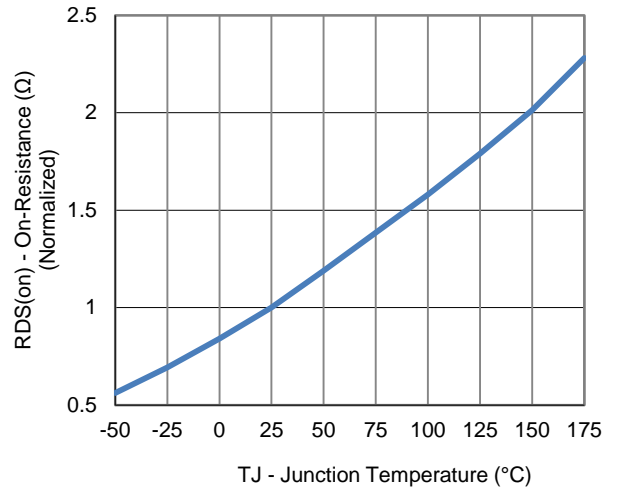


6. Capacitance

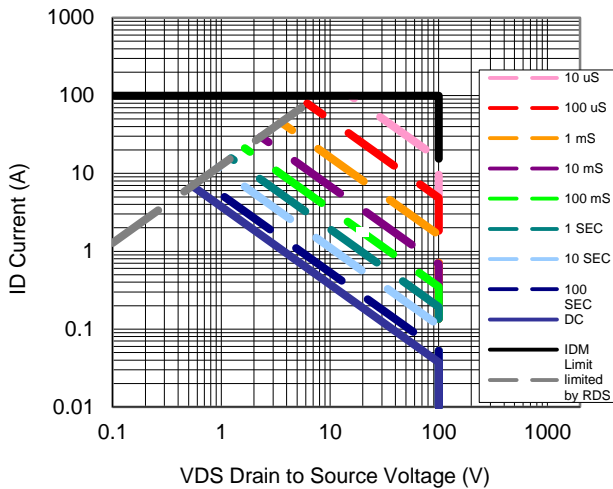
Typical Electrical Characteristics



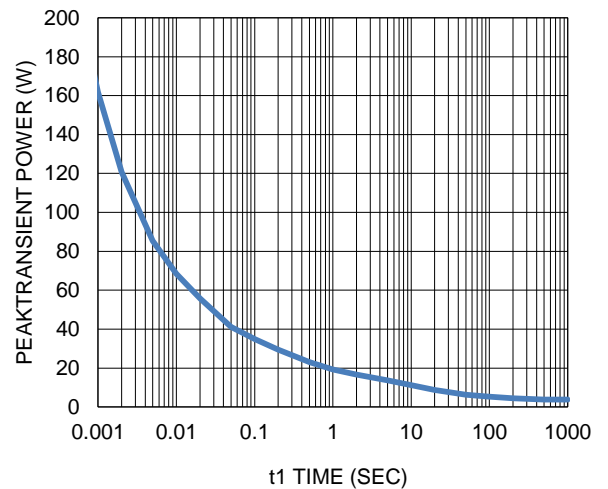
7. Gate Charge



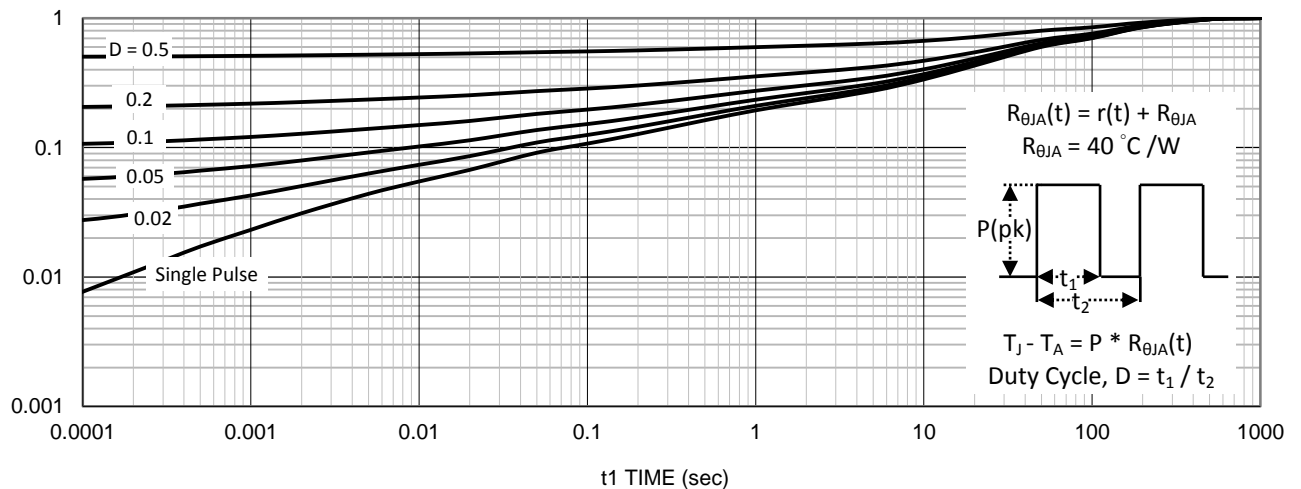
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

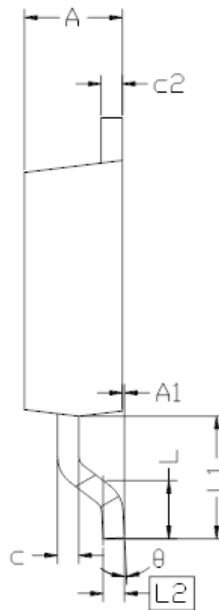
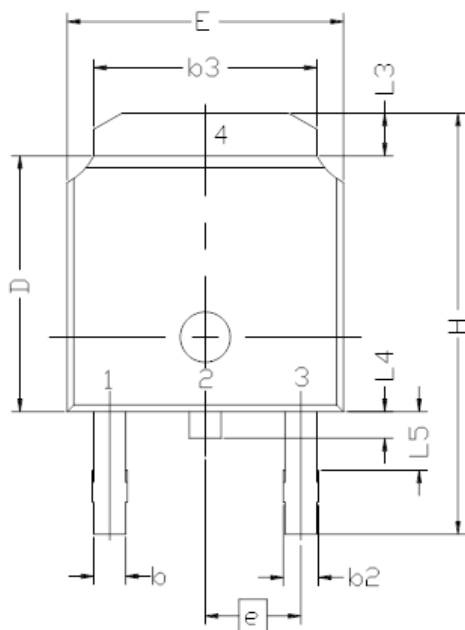


10. Single Pulse Maximum Power Dissipation

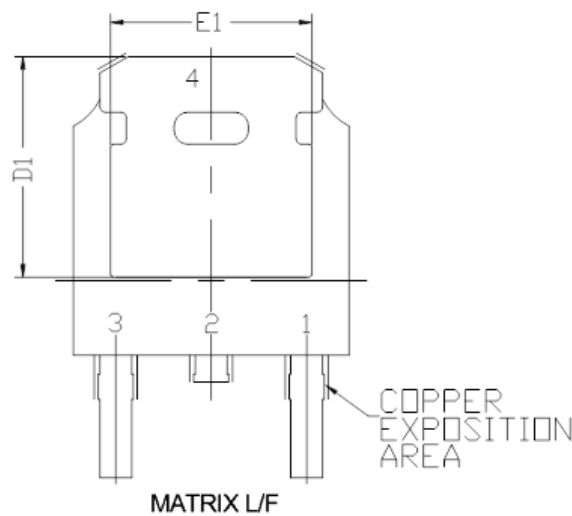
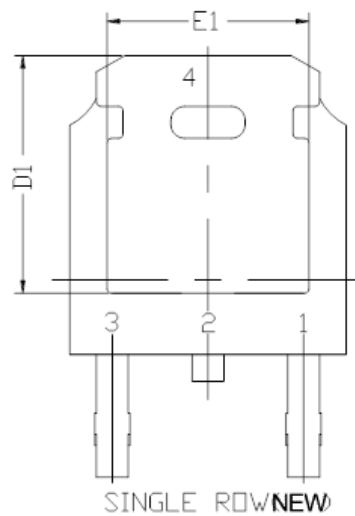


11. Normalized Thermal Transient Junction to Ambient

Package Information



SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
E	6.40	6.60	6.731
L	1.40	1.52	1.77
L1	2.743 REF		
L2	0.508 BSC		
L3	0.89	--	1.27
L4	0.64	--	1.01
L5	--	--	--
D	6.00	6.10	6.223
H	9.40	10.00	10.40
b	0.64	0.76	0.88
b2	0.77	0.84	1.14
b3	5.21	5.34	5.46
e	2.286 BSC		
A	2.20	2.30	2.38
A1	0	--	0.127
c	0.45	0.50	0.60
c2	0.45	0.50	0.58
D1	5.30	--	--
E1	4.40	--	--
θ	0°	--	10°



Note:

1. All Dimension Are In mm.
2. Package Body Sizes Exclude Mold Flash, Protrusion Or Gate Burrs. Mold Flash, Protrusion Or Gate Burrs Shall Not Exceed 0.10 mm Per Side.
3. Package Body Sizes Determined At The Outermost Extremes Of The Plastic Body Exclusive Of Mold Flash, Gate Burrs And Interlead Flash, But Including Any Mismatch Between The Top And Bottom Of The Plastic Body.
4. The Package Top May Be Smaller Than The Package Bottom.
5. Dimension "b" Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.10 mm Total In Excess Of "b" Dimension At Maximum Material Condition. The Dambar Cannot Be Located On The Lower Radius Of The Foot.