# N-Channel 30-V (D-S) MOSFET

## **Key Features:**

- Low r<sub>DS(on)</sub> trench technology
- · Low thermal impedance
- · Fast switching speed

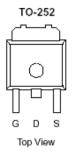
### **Typical Applications:**

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

PRODUCT SUMMARY				
VDS (V)	$r_{DS(on)}(m\Omega)$	I⊳(A)		
30	6 @ V <sub>GS</sub> = 10V	75		
	8 @ V <sub>GS</sub> = 4.5V	65		

in





ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^{\circ}C$ UNLESS OTHERWISE NOTED)					
Parameter			Limit	Units	
Drain-Source Voltage			30	V	
Gate-Source Voltage			±20		
Continuous Drain Current <sup>a</sup>	T <sub>A</sub> =25°C	I <sub>D</sub>	75 A		
Pulsed Drain Current <sup>b</sup>		I <sub>DM</sub>	300	~	
Continuous Source Current (Diode Conduction) <sup>a</sup>	ا <sub>s</sub>	30	А		
Power Dissipation <sup>a</sup>	T <sub>A</sub> =25°C	PD	50	W	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to 175	°C	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Maximum	Units		
Maximum Junction-to-Ambient <sup>a</sup>	R <sub>θJA</sub>	40	°C/W		
Maximum Junction-to-Case	R <sub>θJC</sub>	3	C/ VV		

Notes

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

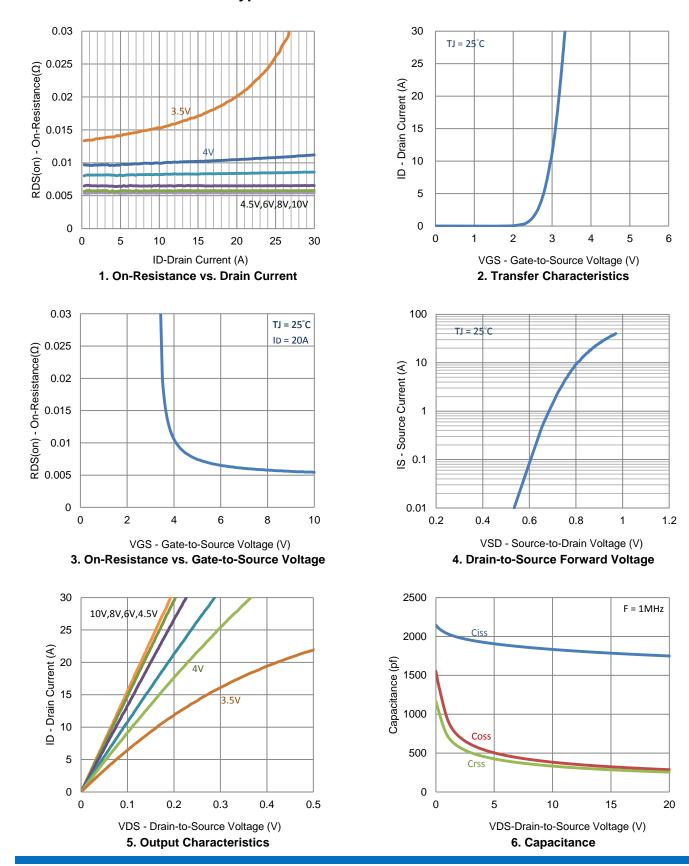
# **Electrical Characteristics**

Parameter	Symbol	ool Test Conditions		Тур	Max	Unit	
Static							
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_D = 250 \text{ uA}$	1			V	
Gate-Body Leakage	I <sub>GSS</sub>				±100	nA	
Zara Cata Valtaga Drain Current		$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}$			1	uA	
Zero Gate Voltage Drain Current	IDSS	$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55^{\circ}\text{C}$			25	u A	
On-State Drain Current	I <sub>D(on)</sub>	$V_{DS} = 5 V, V_{GS} = 10 V$	120			А	
Drain-Source On-Resistance	r.	$V_{GS} = 10 \text{ V}, \text{ I}_{D} = 20 \text{ A}$			6	mΩ	
	r <sub>DS(on)</sub>	$V_{GS} = 4.5 \text{ V}, I_{D} = 18 \text{ A}$			8	11152	
Forward Transconductance	<b>g</b> <sub>fs</sub>	$V_{DS} = 15 \text{ V}, \text{ I}_{D} = 20 \text{ A}$		20		S	
Diode Forward Voltage	$V_{SD}$	$I_{S} = 15 \text{ A}, V_{GS} = 0 \text{ V}$		0.84		V	
		Dynamic					
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 4.5 V,		20		nC	
Gate-Source Charge	Q <sub>gs</sub>	$V_{DS} = 13 V, V_{GS} = 4.3 V,$ $I_{D} = 20 A$		7.3			
Gate-Drain Charge	$Q_gd$	10 - 20 A		11			
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> = 15 V, R <sub>I</sub> = 0.8 Ω,		10			
Rise Time	t <sub>r</sub>	$v_{DS} = 15 v, R_L - 0.8 \Omega_2,$ $I_D = 20 A,$		13		200	
Turn-Off Delay Time	t <sub>d(off)</sub>	$V_{\text{GEN}} = 10 \text{ V}, \text{ R}_{\text{GEN}} = 6 \Omega$		51		ns	
Fall Time	t <sub>f</sub>	$v_{\text{GEN}} = 10 v$ , $N_{\text{GEN}} = 0.02$		21			
Input Capacitance	C <sub>iss</sub>			1785			
Output Capacitance	C <sub>oss</sub>	$V_{DS}$ = 15 V, $V_{GS}$ = 0 V, f = 1 MHz		323		pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	]		285			

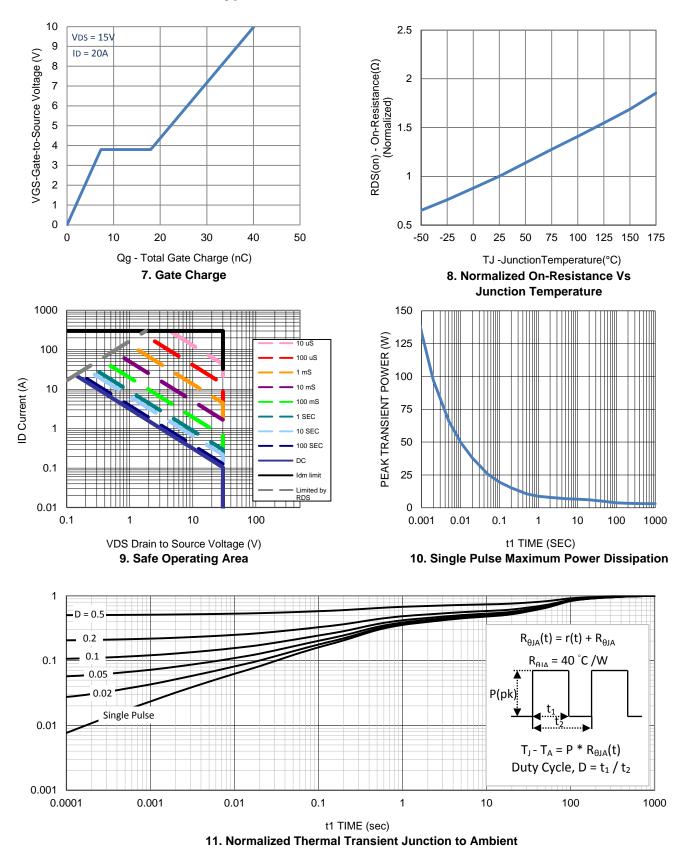
#### Notes

- a. Pulse test: PW <= 300us duty cycle <= 2%.
- b. Guaranteed by design, not subject to production testing.

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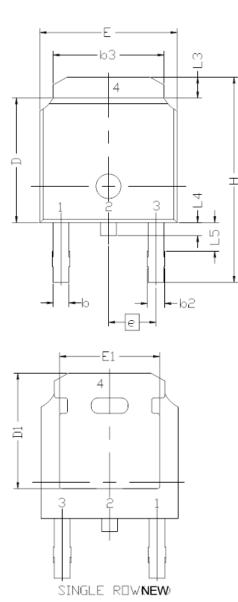
## **Typical Electrical Characteristics**



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# **Package Information**



	DIMENS:		REQMIS		
SYMBOL	MIN	NDM	MAX		
E	6.40	6.60	6.731		
L	1.40	1.52	1.77		
L1		.743 RI			
L2		508 BS	_		
L3	0.89		1.27		
L4	0.64		1.01		
L5					
D	6.00	6.10	6.223		
Н	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 BS	C .		
A	2.20	2.30	2.38		
A1	0		0.127		
C	0.45	0.50	0.60		
c2	0.45	0.45 0.50			
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.