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

Key Features:

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

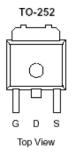
Typical Applications:

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

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

in





ABSOLUTE MAXIMUM RATINGS ($T_A = 25^{\circ}C$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	Limit	Units	
Drain-Source Voltage		V _{DS}	30	V	
Gate-Source Voltage		V_{GS}	±20	v	
Continuous Drain Current ^a	T _A =25°C	I _D	75	А	
Pulsed Drain Current ^b		I _{DM}	300	~	
Continuous Source Current (Diode Conduction) ^a		I _S	30	А	
Power Dissipation ^a	T _A =25°C	PD	50	W	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 175	°C	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Maximum	Units		
Maximum Junction-to-Ambient ^a	$R_{ extsf{ heta}JA}$	40	°C/W		
Maximum Junction-to-Case	$R_{ extsf{ heta}JC}$	3	C/ VV		

Notes

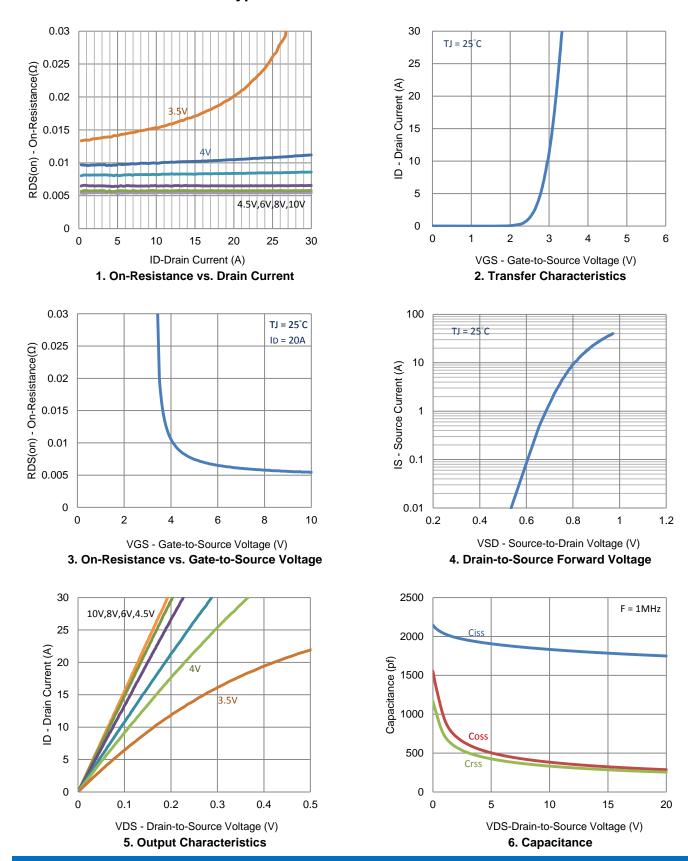
- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

Parameter	Symbol	ol Test Conditions		Тур	Max	Unit	
Static							
Gate-Source Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = 250 \text{ uA}$	1			V	
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			±100	nA	
Zero Gate Voltage Drain Current		$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}$	1		1	uA	
Zero Gale Voltage Drain Current	IDSS	$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55^{\circ}\text{C}$			25	uA	
On-State Drain Current	I _{D(on)}	$V_{DS} = 5 V, V_{GS} = 10 V$	120			А	
Drain Source On Registeres	r	$V_{GS} = 10 \text{ V}, \text{ I}_{D} = 20 \text{ A}$			6	mΩ	
Drain-Source On-Resistance	r _{DS(on)}	$V_{GS} = 4.5 \text{ V}, I_{D} = 18 \text{ A}$			8		
Forward Transconductance	g _{fs}	$V_{DS} = 15 \text{ V}, \text{ I}_{D} = 20 \text{ A}$		20		S	
Diode Forward Voltage	V_{SD}	$I_{S} = 15 \text{ A}, V_{GS} = 0 \text{ V}$		0.84		V	
		Dynamic					
Total Gate Charge	Qg	V _{DS} = 15 V, V _{GS} = 4.5 V,		20		nC	
Gate-Source Charge	Q_gs	$V_{DS} = 13 V, V_{GS} = 4.3 V,$ $I_{D} = 20 A$		7.3			
Gate-Drain Charge	Q_gd	10 - 20 A		11			
Turn-On Delay Time	t _{d(on)}	$V_{DS} = 15 \text{ V}, \text{ R}_{L} = 0.8 \Omega,$		10			
Rise Time	t _r	$V_{\rm DS} = 15$ V, $N_{\rm L} = 0.8$ $\Omega_{\rm r}$, $I_{\rm D} = 20$ A,		13		ns	
Turn-Off Delay Time	t _{d(off)}	$V_{\text{GEN}} = 10 \text{ V}, \text{ R}_{\text{GEN}} = 6 \Omega$		51			
Fall Time	t _f	$v_{\text{GEN}} = 10^{\circ} v$, $N_{\text{GEN}} = 0.22$		21			
Input Capacitance	C _{iss}			1785			
Output Capacitance	C _{oss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz		323		pF	
Reverse Transfer Capacitance	C _{rss}			285			

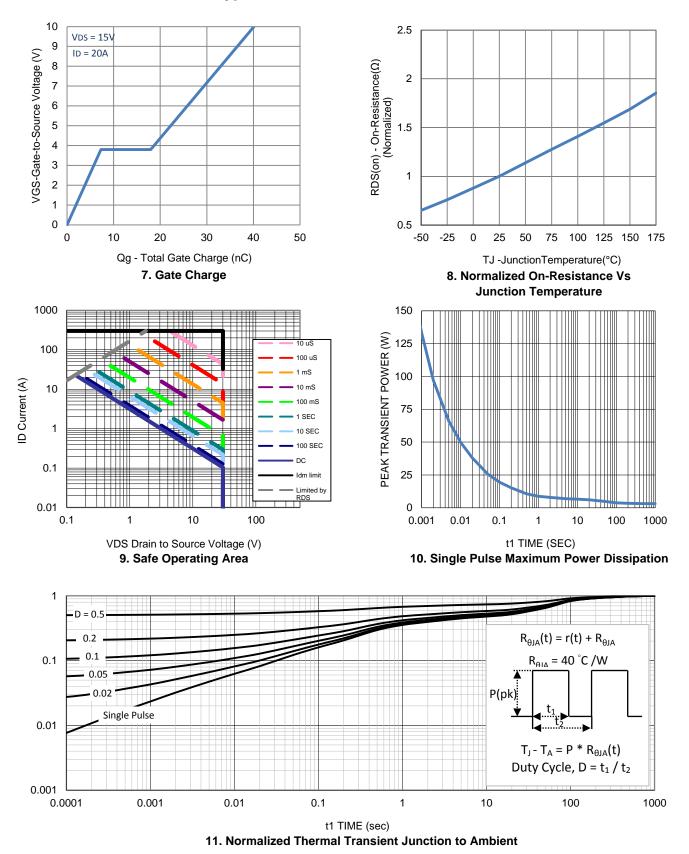
Notes

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

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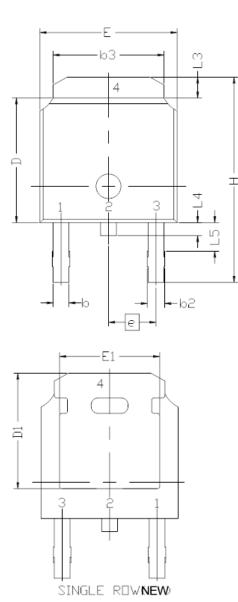


Typical Electrical Characteristics



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Package Information



DIMENSIONAL REQM							
SYMBOL	MIN	NDM	MAX				
E	6.40	6.60	6.731				
L	1.40	1.52	1.77				
L1	2	2.743 REF					
L2	0.	.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		286 BS					
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.