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

Key Features:

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

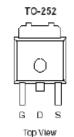
Typical Applications:

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

PRODUCT SUMMARY				
V _{DS} (V)	$r_{DS(on)}(m\Omega)$	I _D (A)		
-30	20 @ V _{GS} = -10V	-41		
	$35 @ V_{GS} = -4.5V$	-31		







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}	±25	V		
Continuous Drain Current a	T _A =25°C	I_D	-41	Α		
Pulsed Drain Current ^b		I _{DM}	-150	ζ		
Continuous Source Current (Diode Conduction) ^a			-45	Α		
Power Dissipation ^a	T _A =25°C	P_{D}	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	$R_{\theta JA}$	40	°C/W		
Maximum Junction-to-Case	$R_{\theta JC}$	3	C/VV		

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Notes

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

Electrical Characteristics

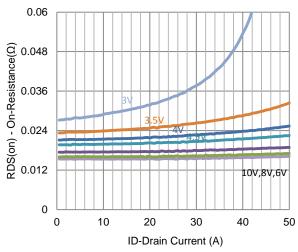
Parameter	Symbol	nbol Test Conditions		Тур	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_{D} = -250 \text{ uA}$	-1			V
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			±100	nA
Zero Gate Voltage Drain Current		$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$			-1	uA
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55^{\circ}\text{C}$			-25 uA	
On-State Drain Current	I _{D(on)}	$V_{DS} = -5 \text{ V}, V_{GS} = -10 \text{ V}$	-75			Α
Drain Source On Begintance	r	$V_{GS} = -10 \text{ V}, I_{D} = -20 \text{ A}$			20	mΩ
Drain-Source On-Resistance	r _{DS(on)}	$V_{GS} = -4.5 \text{ V}, I_{D} = -15 \text{ A}$			35	11177
Forward Transconductance	g _{fs}	$V_{DS} = -15 \text{ V}, I_{D} = -20 \text{ A}$		28		S
Diode Forward Voltage	V_{SD}	$I_S = -22.5 \text{ A}, V_{GS} = 0 \text{ V}$		-0.98		V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = -15 \text{ V}, V_{GS} = -4.5 \text{ V},$		31		
Gate-Source Charge	Q_gs	$V_{DS} = -13 \text{ V}, V_{GS} = -4.3 \text{ V},$ $I_{D} = -20 \text{ A}$		8.5		nC
Gate-Drain Charge	Q_{gd}	1D = -20 A		14		
Turn-On Delay Time	t _{d(on)}	$V_{DS} = -15 \text{ V}, R_1 = 0.8 \Omega,$		7		
Rise Time	t _r	$V_{DS} = -13 \text{ V}, K_L = 0.8 \Omega,$ $I_D = -20 \text{ A},$		9		no
Turn-Off Delay Time	$t_{d(off)}$	$V_{GEN} = -10 \text{ V}, R_{GEN} = 6 \Omega$		85		ns
Fall Time	t _f	V GEN = 10 V, T(GEN = 0.32		40		
Input Capacitance	C _{iss}			1934		
Output Capacitance	C _{oss}	$V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		408		pF
Reverse Transfer Capacitance	C_{rss}			226		

Notes

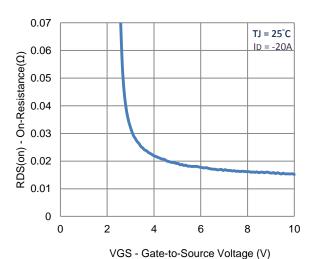
- a. Pulse test: PW <= 300us duty cycle <= 2%.
- b. Guaranteed by design, not subject to production testing.

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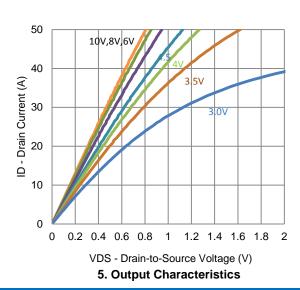
Typical Electrical Characteristics

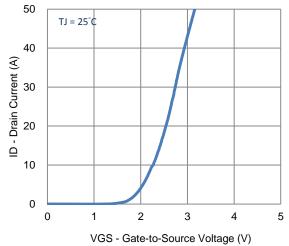


1. On-Resistance vs. Drain Current

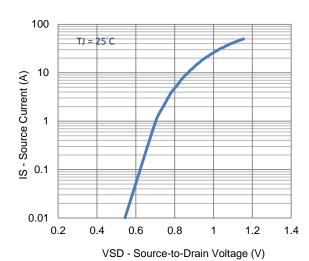


3. On-Resistance vs. Gate-to-Source Voltage

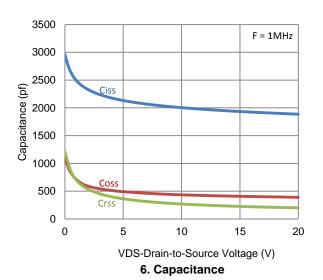




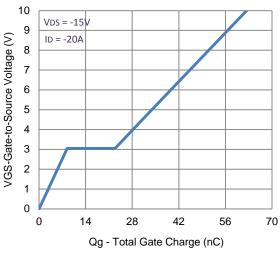
2. Transfer Characteristics



4. Drain-to-Source Forward Voltage

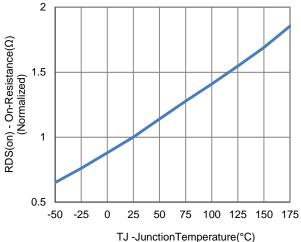


Typical Electrical Characteristics

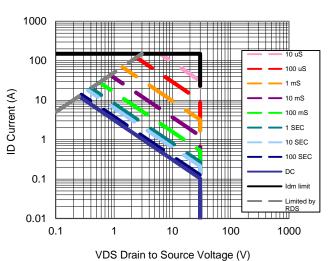


Total Gate Charge (nC)

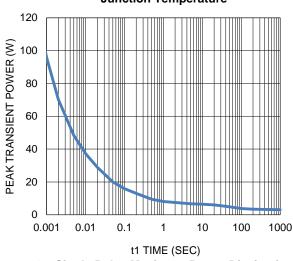
7. Gate Charge



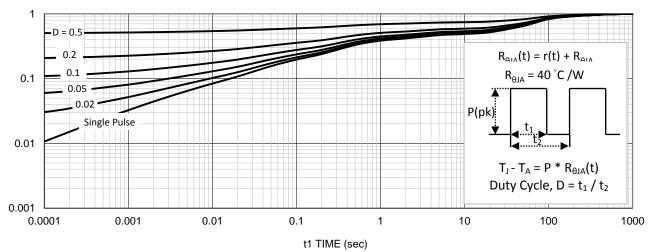
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

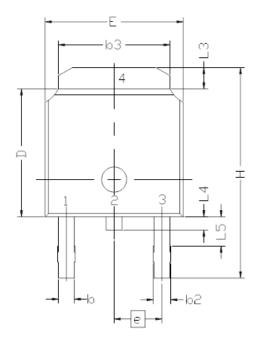


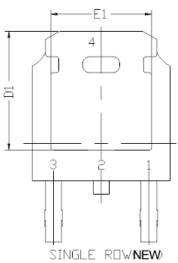
10. Single Pulse Maximum Power Dissipation

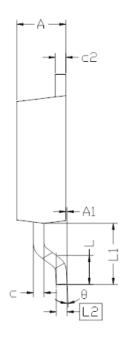


11. Normalized Thermal Transient Junction to Ambient

Package Information







CVMDEI	DIMENS:		REQMTS		
SYMBOL	MIN	NDM	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		
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		
е	2.	286 BS	C		
Α	2,20	2,30	2.38		
A1	0		0.127		
	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.
- 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.