

NCE0157T-VB Datasheet N-Channel 100 V (D-S) 175 °C MOSFET

PRODUCT SUMMARY					
V _{DS} (V)	$V_{DS}(V)$ $R_{DS(on)}(\Omega)$				
100	0.006 at V _{GS} = 10 V	150			

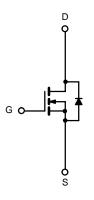
FEATURES

- Trench Power MOSFET
- New Package with Low Thermal Resistance









N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS T _C = 25 °C, unless otherwise noted					
Parameter	Symbol	Limit	Unit		
Drain-Source Voltage	V _{DS}	100	V		
Gate-Source Voltage	V_{GS}	± 20	V		
Continuous Proin Current (T. – 175 °C)	T _C = 25 °C		150	A	
Continuous Drain Current (T _J = 175 °C)	T _C = 125 °C	I _D	100 ^a		
Pulsed Drain Current	I _{DM}	600	Α		
Avalanche Current	I _{AR}	75			
Repetitive Avalanche Energy ^b	L = 0.1 mH	E _{AR}	280	mJ	
Maximum Power Dissipation ^b	T _C = 25 °C	В	375 ^c	W	
waximum Fower Dissipation —	T _A = 25 °C	P _D	3.75		
Operating Junction and Storage Temperature	T _J , T _{stg}	- 55 to 175	°C		

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Limit	Unit	
Junction-to-Ambient	TO-247	R _{thJA}	40	°C/W	
Junction-to-Case (Drain)		R _{thJC}	0.5	C/VV	

Notes:

- a. Package limited.
- b. Duty cycle \leq 1 %.
- c. See SOA curve for voltage derating.

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Parameter	Symbol	bol Test Conditions		Тур.	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{DS}	V_{DS} $V_{DS} = 0 \text{ V, } I_{D} = 250 \mu\text{A}$				\/	
Gate-Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 250 \mu\text{A}$	2		4	V	
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
		V _{DS} = 100 V, V _{GS} = 0 V			1		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V, T _J = 125 °C			50	μΑ	
		V _{DS} = 100 V, V _{GS} = 0 V, T _J = 175 °C			250		
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 5 \text{ V}, V_{GS} = 10 \text{ V}$	120			Α	
		V _{GS} = 10 V, I _D = 30 A		0.006			
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 30 A, T _J = 125 °C		0.017		Ω	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175 °C		0.025			
Forward Transconductance ^a	9 _{fs}	V _{DS} = 15 V, I _D = 30 A	25			S	
Dynamic ^b							
Input Capacitance	C _{iss}			6700		pF	
Output Capacitance	C _{oss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$		750			
Reverse Transfer Capacitance	C _{rss}			280			
Total Gate Charge ^c	Qg			110	160		
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = 50 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 85 \text{ A}$		24		nC	
Gate-Drain Charge ^c	Q_{gd}			24			
Gate Resistance	R _g		1.0		6.2	Ω	
Turn-On Delay Time ^c	t _{d(on)}			20	30		
Rise Time ^c	t _r	$V_{DD} = 50 \text{ V}, R_{L} = 0.6 \Omega$		125	200	20	
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 85 \text{ A}, V_{GEN} = 10 \text{ V}, R_g = 2.5 \Omega$		55	85	ns ns	
Fall Time ^c	t _f			130	195		
Source-Drain Diode Ratings and Cha	aracteristics	Γ _C = 25 °C ^b					
Continuous Current	Is				110	۸	
Pulsed Current	I _{SM}				240	Α	
Forward Voltage ^a	V _{SD}	I _F = 85 A, V _{GS} = 0 V		1.0	1.5	V	
Reverse Recovery Time	t _{rr}			70	140	ns	
Peak Reverse Recovery Charge	I _{RM(REC)}	I _F = 50 A, dl/dt = 100 A/μs		5.5	10	Α	
Reverse Recovery Charge	` '	Q _{rr}		0.19	0.35	иC	

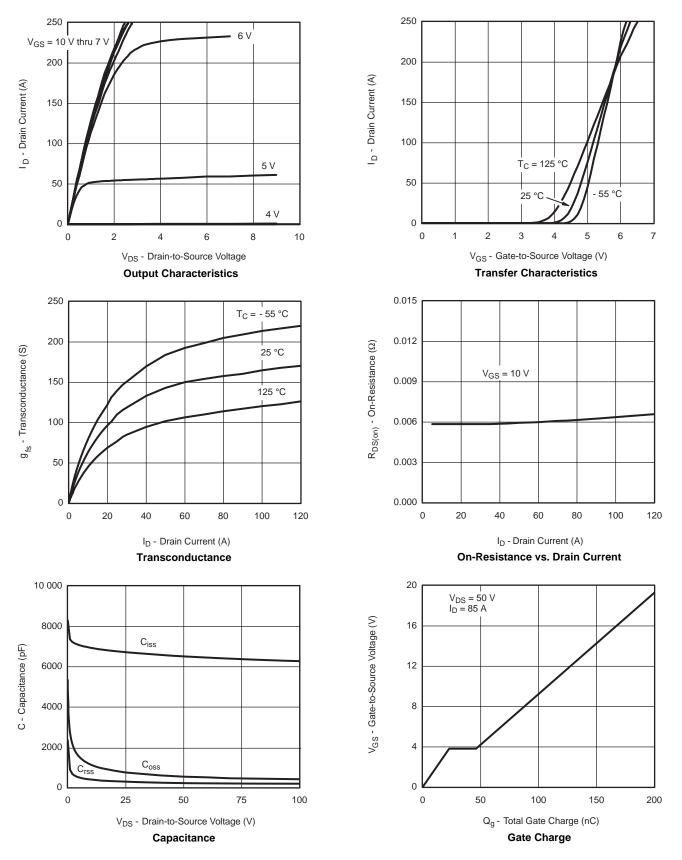
Notes:

- a. Pulse test; pulse width \leq 300 µs, duty cycle \leq 2 %.
- b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

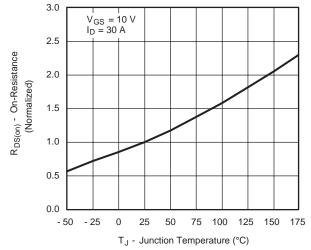


TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

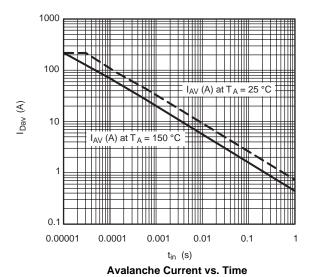




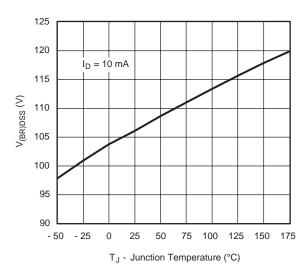
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On-Resistance vs. Junction Temperature



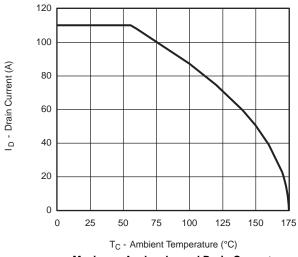
Source-Drain Diode Forward Voltage

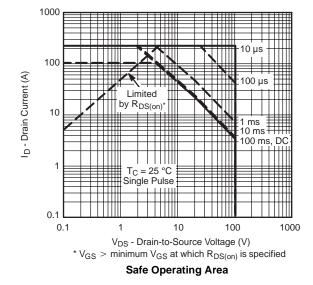


Drain Source Breakdown vs. Junction Temperature

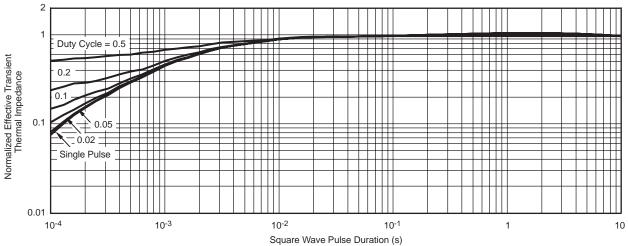


THERMAL RATINGS





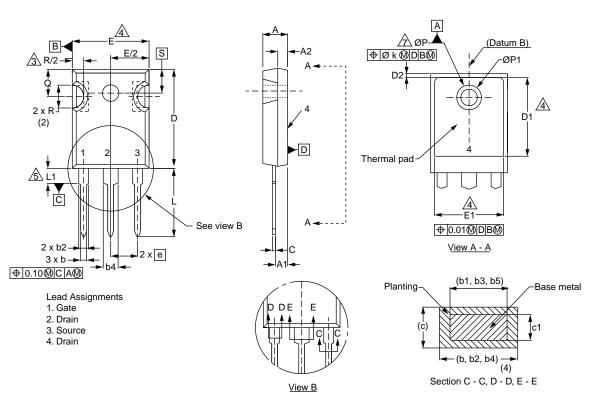
Maximum Avalanche and Drain Current vs. Case Temperature



Normalized Thermal Transient Impedance, Junction-to-Case



TO-247AC



	MILLIMETERS		INC	HES
DIM.	MIN.	MAX.	MIN.	MAX.
Α	4.58	5.31	0.180	0.209
A1	2.21	2.59	0.087	0.102
A2	1.17	2.49	0.046	0.098
b	0.99	1.40	0.039	0.055
b1	0.99	1.35	0.039	0.053
b2	1.53	2.39	0.060	0.094
b3	1.65	2.37	0.065	0.093
b4	2.42	3.43	0.095	0.135
b5	2.59	3.38	0.102	0.133
С	0.38	0.86	0.015	0.034
c1	0.38	0.76	0.015	0.030
D	19.71	20.82	0.776	0.820
D1	13.08	-	0.515	-

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	MILLIMETERS		MILLIMETERS INCHES	
DIM.	MIN.	MAX.	MIN.	MAX.
D2	0.51	1.30	0.020	0.051
Е	15.29	15.87	0.602	0.625
E1	13.72	-	0.540	-
е	5.46 BSC		0.215	BSC
Øk	0.254		0.010	
L	14.20	16.25	0.559	0.640
L1	3.71	4.29	0.146	0.169
Ν	7.62 BSC		0.300 BSC	
ØΡ	3.51	3.66	0.138	0.144
Ø P1	-	7.39	-	0.291
Q	5.31	5.69	0.209	0.224
R	4.52	5.49	0.178	0.216
S	5.51 BSC		0.217	BSC



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