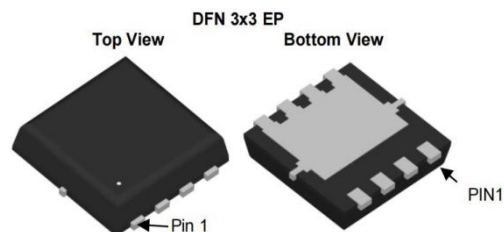




Product Summary

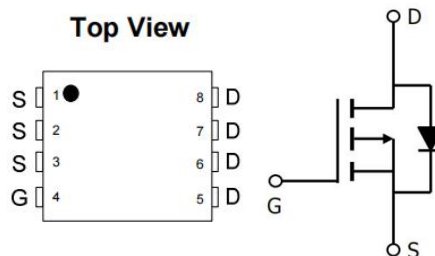
$V_{(BR)DSS}$	$R_{DS(ON)} \text{ max}$	I_D
-30V	$<11.0\text{m}\Omega @ V_{GS}=-10\text{V}$	-24A
	$<17.5\text{m}\Omega @ V_{GS}=-4.5\text{V}$	

Package & Internal Circuit



Description and Applications

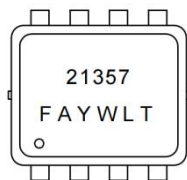
- Trench technology to provide excellent $R_{DS(ON)}$
- Use as a load switch or other general applications
- RoHS and Halogen-Free Compliant.



Ordering Information

Part Number	Package Type	Package Qty
CFN21357	DFN3x3EP	5,000/Tape & Reel

Marking Information



21357--Part Number

F-Fab location

A-Assembly location

Y--Year

W--Week

LT--Lot sequence

Green product

Absolute Maximum Rating ($T_{amb}=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current - Continuous	$T_a=25^{\circ}\text{C}$	I_D	-24	A
	$T_a=100^{\circ}\text{C}$		-24	A
Pulsed Drain Current		I_{DM}	-82	A
Power Dissipation	$T_a=25^{\circ}\text{C}$	P_D	24	W
	$T_a=100^{\circ}\text{C}$		9.6	W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$	49	60	$^{\circ}\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	4.9	5.2	$^{\circ}\text{C/W}$

Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	-30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -30\text{V}$, $V_{GS} = 0\text{V}$			-1	μA
		$T_J = 55^{\circ}\text{C}$			-5	μA
I_{GSS}	Gate-Body leakage current	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	-1	-1.5	-2.0	V
$R_{DS(on)}$	Drain-Source on-Resistance	$V_{GS} = -10\text{V}$, $I_D = -17\text{A}$		8.0	11.0	m Ω
		$V_{GS} = -4.5\text{V}$, $I_D = -13\text{A}$		12.0	17.5	m Ω
g_{FS}	Forward Transconductance	$V_{DS} = -5\text{V}$, $I_D = -17\text{A}$		61.8		S
V_{SD}	Body Diode Forward Voltage	$I_S = -1\text{A}$, $V_{GS} = 0\text{V}$		-0.73	-1.0	V
I_S	Maximum Body-Diode Continuous Current				-24	A
Dynamic parameters						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$ $V_{DS} = -15\text{V}$ $f = 1.0\text{MHz}$		1821		pF
C_{oss}	Output Capacitance			237		pF
C_{rss}	Reverse Transfer Capacitance			205		pF
R_g	Gate resistance	$f = 1.0\text{MHz}$		4.4		Ω
Switching Parameters						
Q_g	Total Gate Charge	$V_{GS} = -10\text{V}$ $V_{DS} = -15\text{V}$ $I_D = 17\text{A}$		37		nC
Q_{gs}	Gate Source Charge			7.3		nC
Q_{gd}	Gate Drain Charge			7.7		nC
$t_{D(on)}$	Turn-On Delay Time	$V_{DS} = -15\text{V}$ $V_{GS} = -10\text{V}$ $R_L = 0.9\Omega$ $R_G = 3\Omega$		9		ns
t_r	Turn-On Rise Time			71		ns
$t_{D(off)}$	Turn-Off Delay Time			46		ns
t_f	Turn-Off Fall Time			77		ns
t_{rr}	Body Diode Reverse Recovery Time	$I_F = 17\text{A}$ $di/dt = 100\text{ A}/\mu\text{s}$		13.8		ns
Q_{rr}	Body Diode Reverse Recovery Charge			1.2		nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

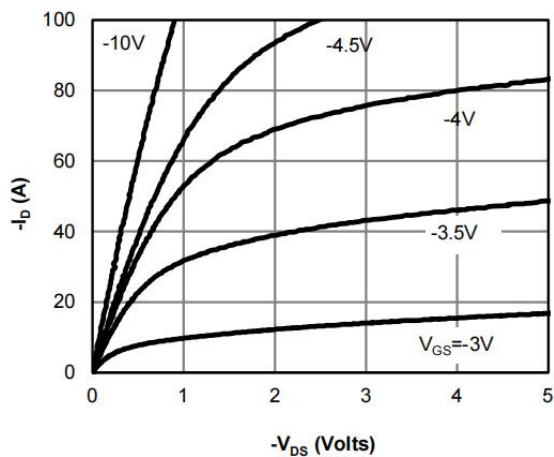


Figure 1: On-Region Characteristics

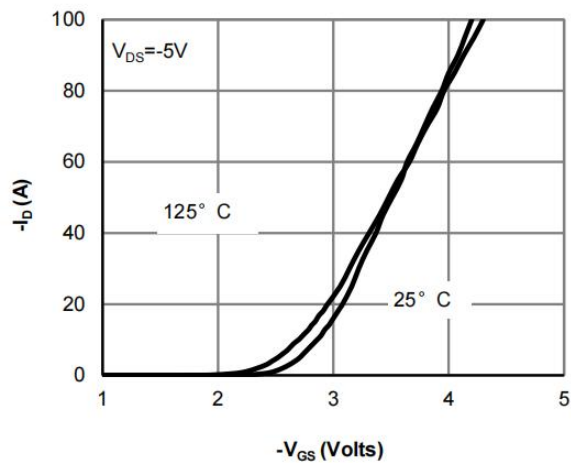


Figure 2: Transfer Characteristics

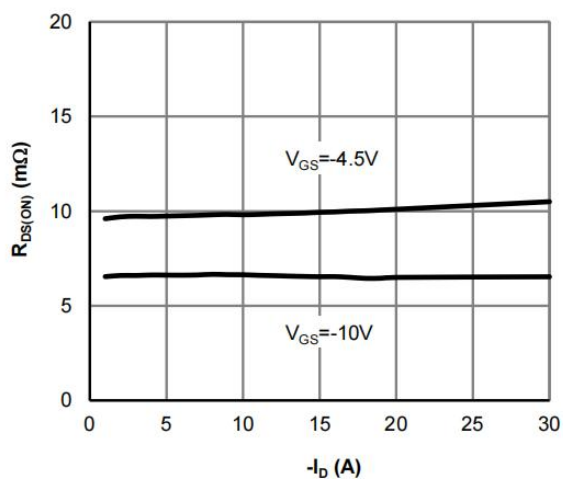


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

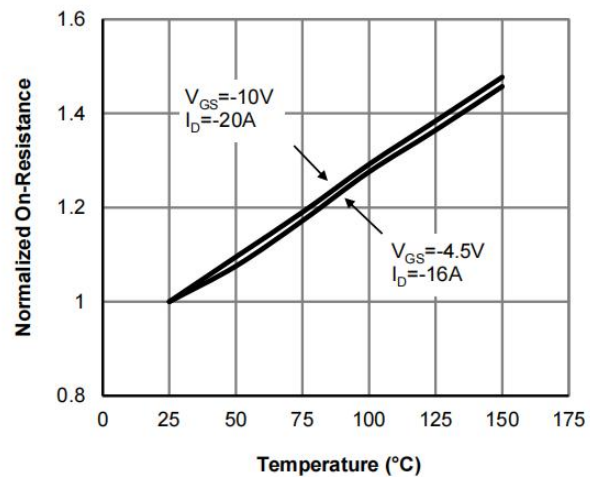


Figure 4: On-Resistance vs. Junction Temperature

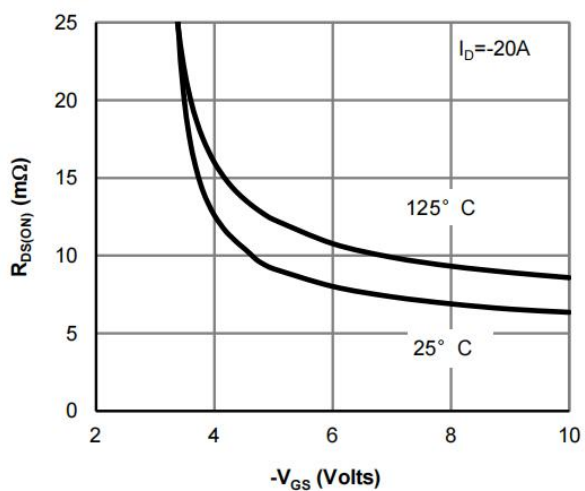


Figure 5: On-Resistance vs. Gate-Source Voltage

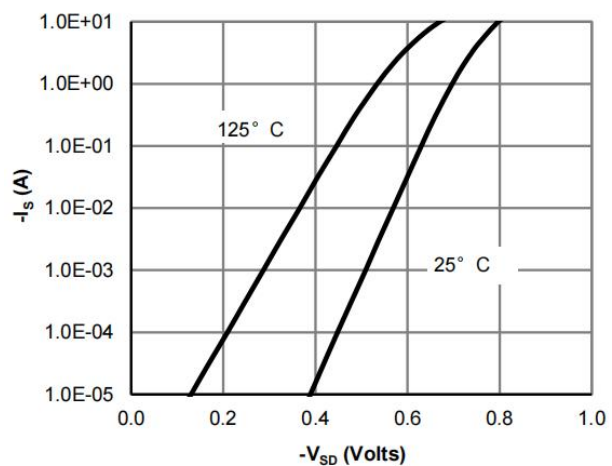


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

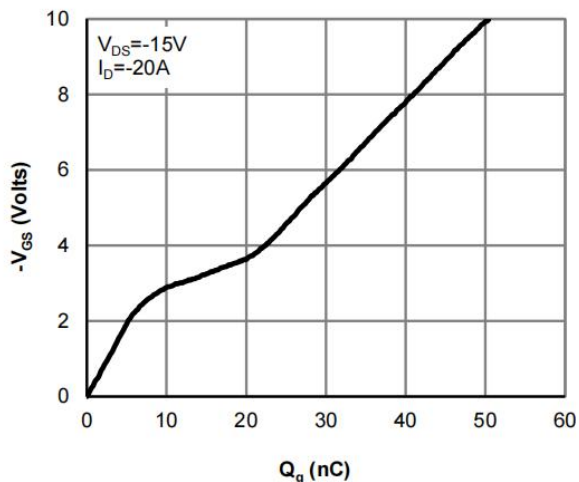


Figure 7: Gate-Charge Characteristics

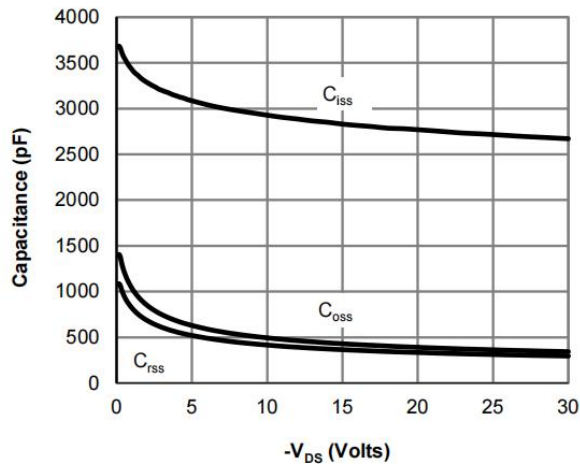


Figure 8: Capacitance Characteristics

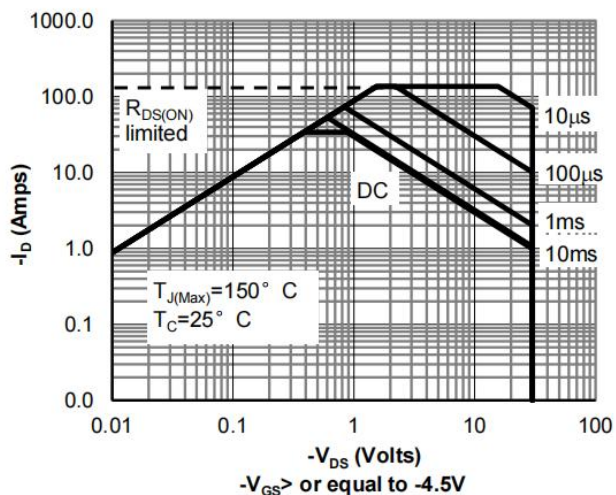


Figure 9: Maximum Forward Biased Safe Operating Area

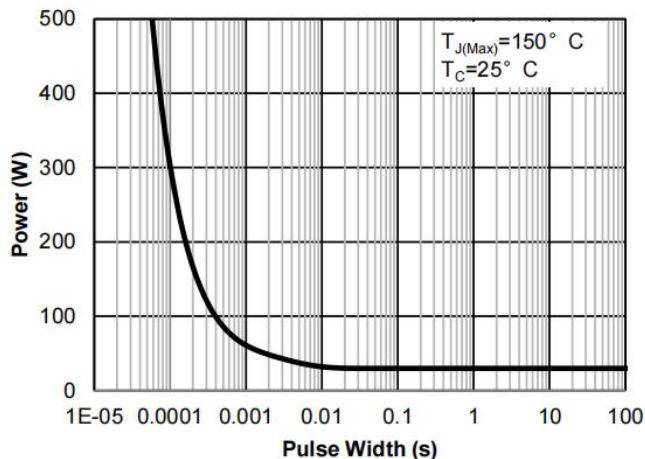


Figure 10: Single Pulse Power Rating Junction-to-Ambient

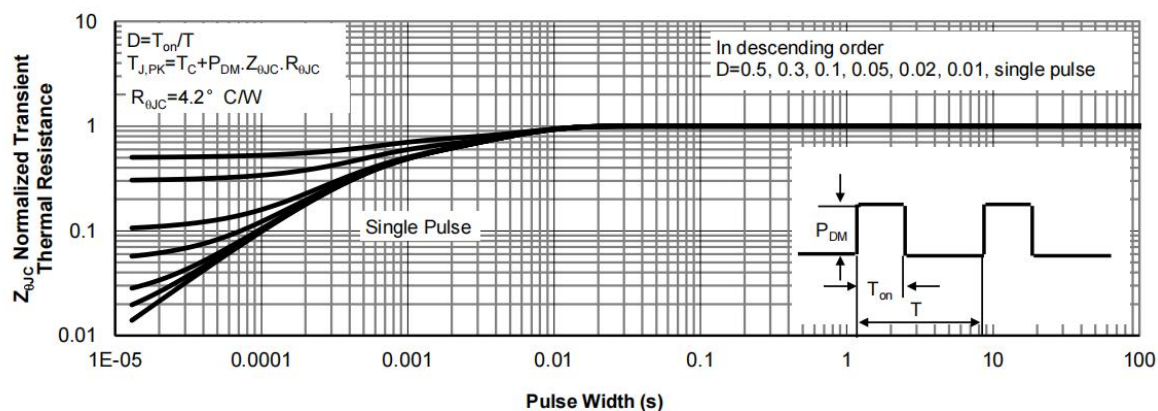
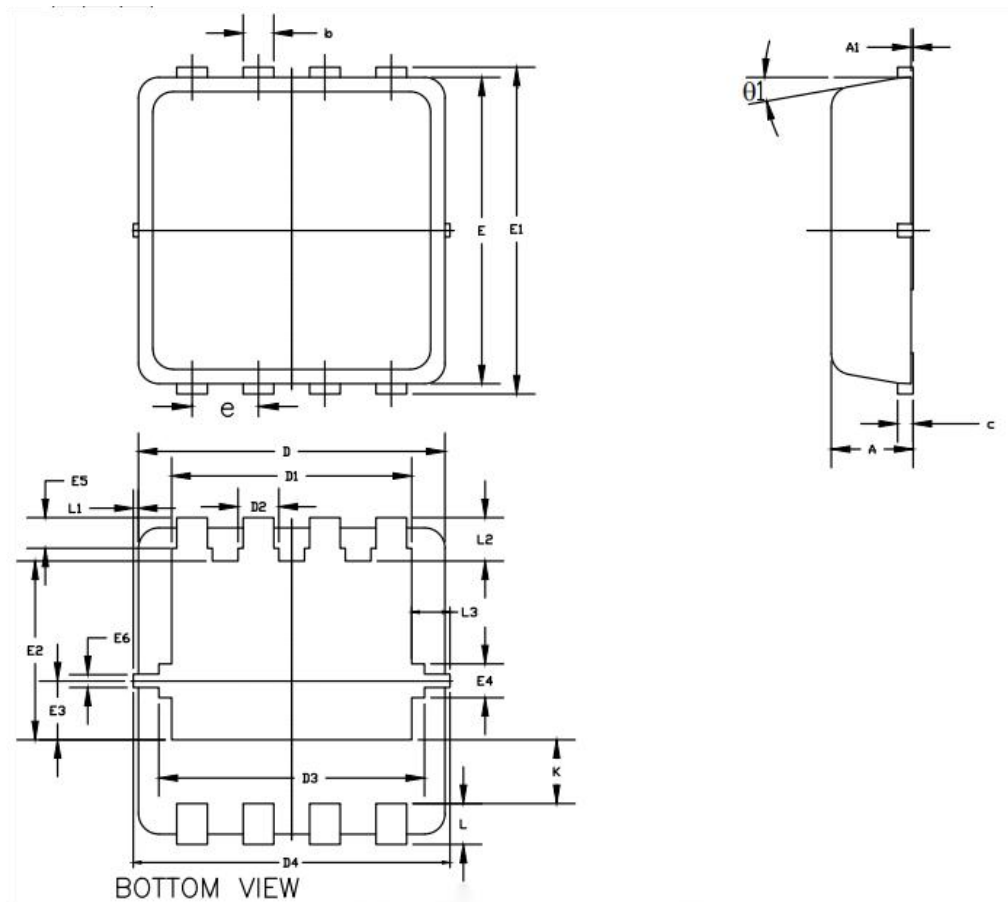


Figure 11: Normalized Maximum Transient Thermal Impedance

DFN3x3EP Package



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.80	0.90	0.028	0.031	0.035
A1	0.00	0.025	0.05	0.000	0.001	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	2.90	3.00	3.10	0.114	0.118	0.122
D1	2.25	2.35	2.45	0.089	0.093	0.097
D2	0.30	0.40	0.50	0.012	0.016	0.020
D3	2.50	2.60	2.70	0.098	0.102	0.106
D4	3.00	3.10	3.20	0.118	0.122	0.126
E	2.90	3.00	3.10	0.114	0.118	0.122
E1	3.10	3.20	3.30	0.122	0.126	0.130
E2	1.65	1.75	1.85	0.065	0.069	0.073
E3	0.48	0.58	0.68	0.019	0.023	0.027
E4	0.23	0.33	0.43	0.009	0.013	0.017
E5	0.20	0.30	0.40	0.008	0.012	0.016
E6	0.075	0.125	0.175	0.003	0.005	0.007
e	0.60	0.65	0.70	0.024	0.026	0.028
K	0.52	0.62	0.72	0.020	0.024	0.028
L	0.30	0.40	0.50	0.012	0.016	0.020
L1	0	0.05	0.10	0	0.002	0.004
L2	0.33	0.43	0.53	0.013	0.017	0.021
L3	0.275	0.375	0.475	0.011	0.015	0.019
$\theta 1$	0°	10°	12°	0°	10°	12°

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