

■ **PRODUCT CHARACTERISTICS**

VDSS	20V
$R_{DS(on)}$ Typ($V_{GS}@=4.5V$)	5.2mΩ
$R_{DS(on)}$ Typ($V_{GS}@=2.5V$)	6.8mΩ
ID	55A

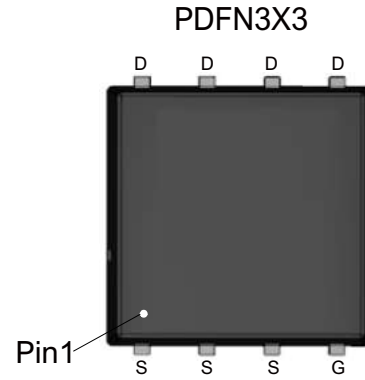
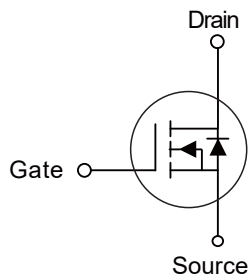
■ **FEATURES**

- Low reverse transfer capacitance
- Fast switching capability

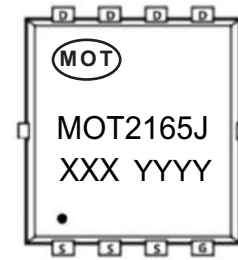
■ **APPLICATIONS**

- Power switching application
- Notebook Vcore

■ **SYMBOL**



Pin configuration (Top view)



XXX = Lot Number
YYYY = Year Week

Marking

Order information

Device	Package	Shipping
MOT2165J/TR	PDFN3X3	5000Tape&Reel

■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current	I _D ^①	55	A
Pulsed Drain Current	I _{DM} ^②	200	A
Single Pulsed Avalanche Energy	E _{AS} ^③	80	mJ
Maximum Power Dissipation	P _D ^①	30	W
Thermal Resistance from Junction to Ambient	R _{θJA}	40	°C/W
Thermal Resistance from Junction to Case	R _{θJC}	4.5	°C/W
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55~+150	°C

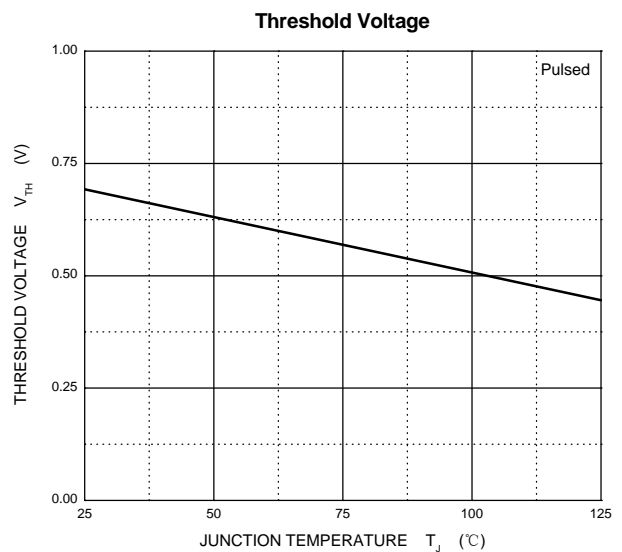
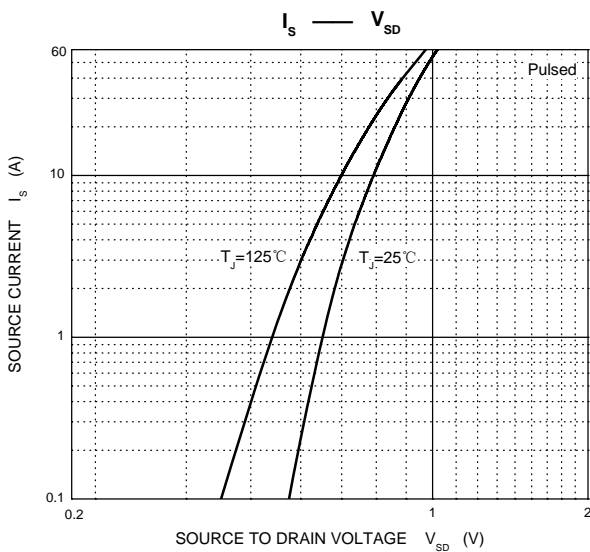
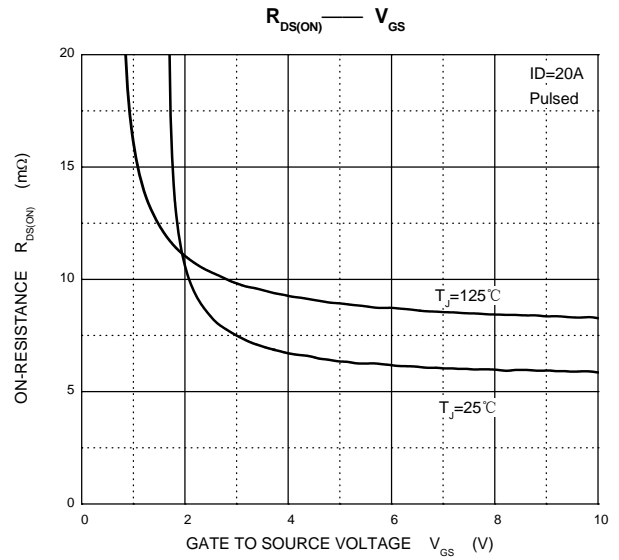
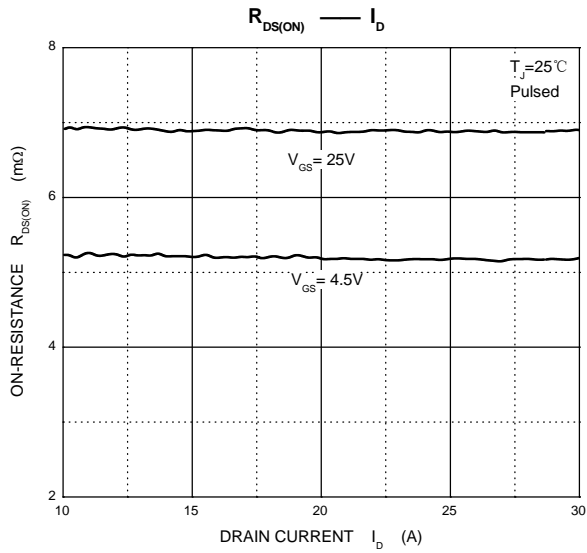
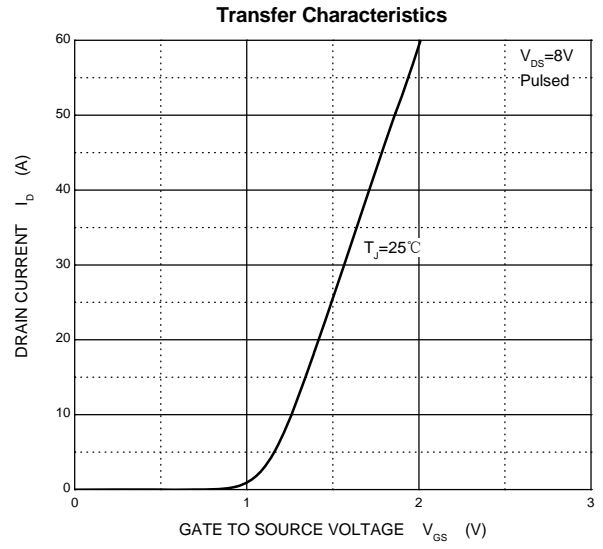
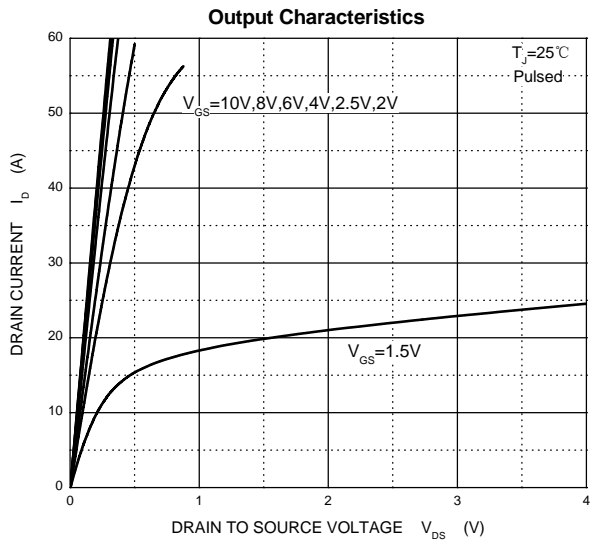
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	20	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 16V, T _J = 25°C	-	-	1.0	μA
Gate-body leakage current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±12V	-	-	±100	nA
On characteristics^④						
Gate-threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.4	0.7	1.2	V
Static drain-source on-state resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 20A	-	5.2	6.5	mΩ
		V _{GS} = 2.5V, I _D = 20A	-	6.8	8.5	mΩ
Forward transconductance	g _{FS}	V _{DS} = 10V, I _D = 20A	-	24	-	S
Dynamic characteristics^{④⑤}						
Input capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 100KHz	-	1145	-	pF
Output capacitance	C _{oss}		-	189	-	
Reverse transfer capacitance	C _{rss}		-	181	-	
Gate resistance	R _g	f = 1MHz	-	3.9	-	Ω
Switching characteristics						
Total gate charge	Q _g	V _{GS} = 10V, V _{DS} = 25V, I _D = 14A	-	35	-	nC
Gate-source charge	Q _{gs}		-	1.0	-	
Gate-drain charge	Q _{gd}		-	8.3	-	
Turn-on delay time	t _{d(on)}	V _{DS} = 15V, V _{GS} = 10V, I _D = 14A, R _G = 3Ω, R _L = 0.75Ω,	-	10	-	ns
Turn-on rise time	t _r		-	34	-	
Turn-off delay time	t _{d(off)}		-	41	-	
Turn-off fall time	t _f		-	11	-	
Drain-source diode characteristics						
Drain-source diode forward voltage	V _{SD} ^④	V _{GS} = 0V, I _S = 20A	-	-	1.2	V
Drain-source diode forward current	I _S ^①		-	-	55	A
Pulsed drain-source diode forward current	I _{SM} ^②		-	-	200	A

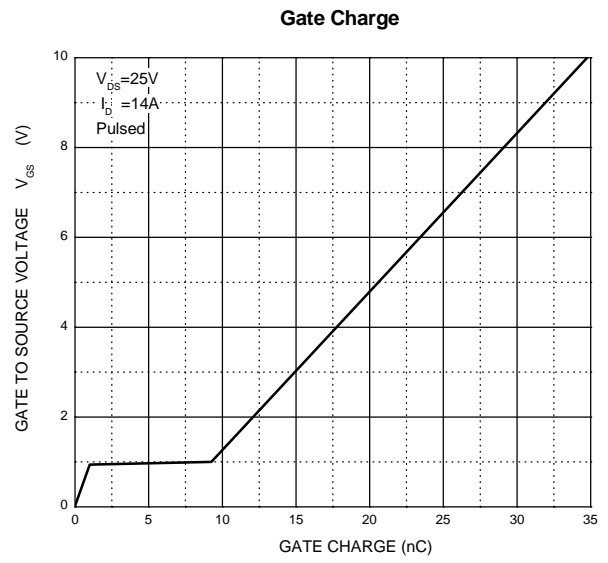
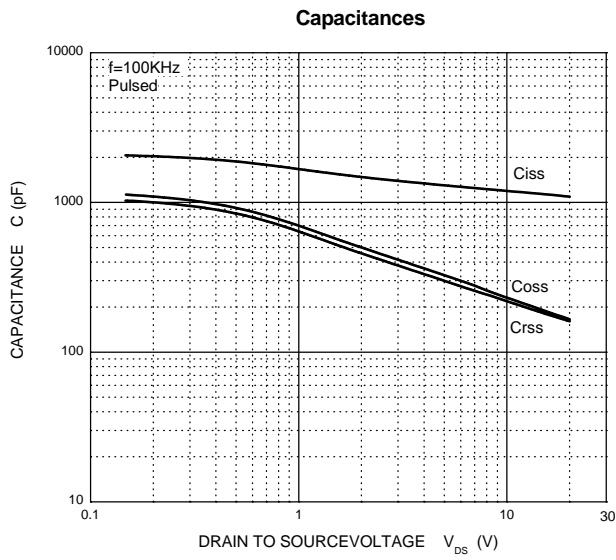
Notes:

1. T_C = 25°C Limited only by maximum temperature allowed.
2. P_W ≤ 10μs, Duty cycle ≤ 1%.
3. EAS condition: V_{DD} = 10V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.
4. Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
5. Guaranteed by design, not subject to production.

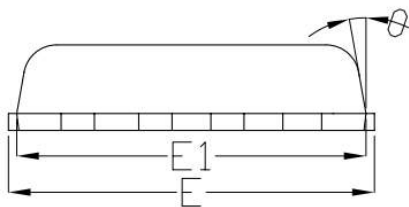
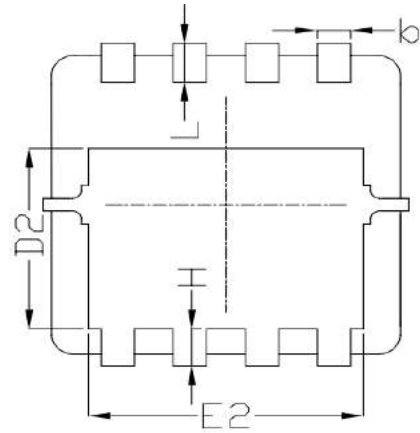
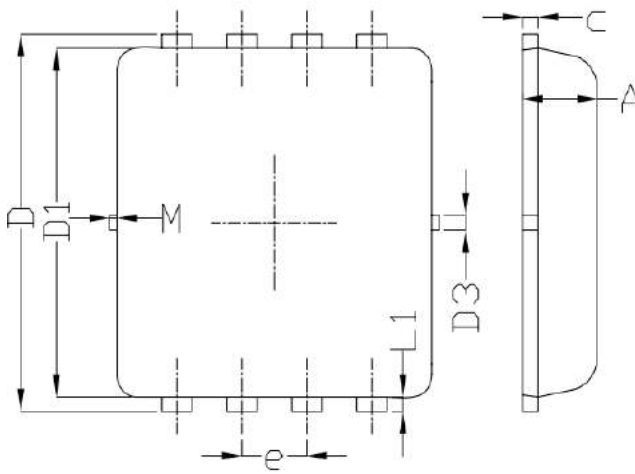
■ TYPICAL CHARACTERISTICS



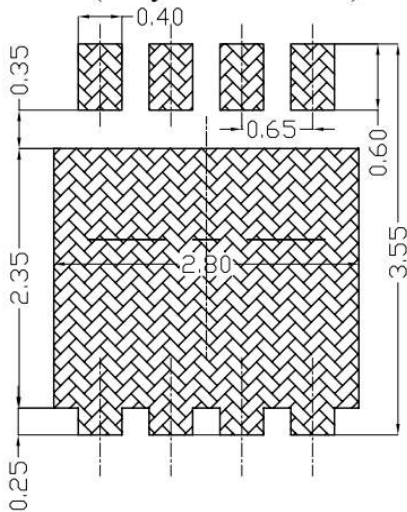
■ TYPICAL CHARACTERISTICS(Cont.)



■ PDFN3X3 PACKAGE OUTLINE DIMENSIONS



Land Pattern
(Only for Reference)



SYMBOL	DIMENSIONAL REOMTS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	---	0.13	---
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	---	0.13	---
θ	---	10°	12°
M	*	*	0.15
* Not specified			

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