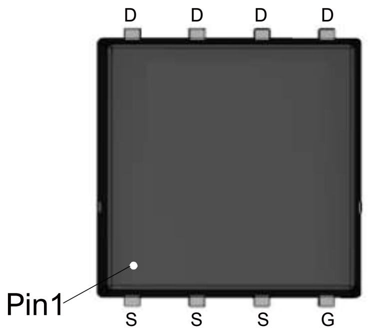
PRODUCT CHARACTERISTICS

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

PDFN3X3



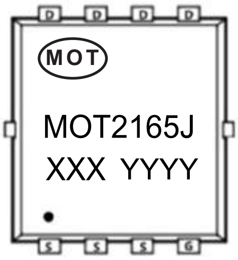
FEATURES

Low reverse transfer capacitance
Fast switching capability

APPLICATIONS

Power switching application
Notebook Vcore

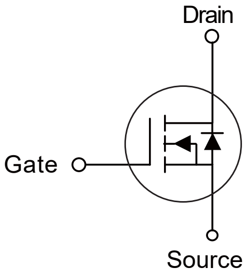
Pin configuration (Top view)



XXX = Lot Number
YYYY = Year Week

Marking

SYMBOL



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	$R_{\theta JA}$	40	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	4.5	℃/W
Operating Junction and Storage Temperature Range	T_J ,T_{stg}	-55~+150	℃

■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℃	-	-	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-sate 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 ④ ⑤						
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 forwardcurrent	I_S ①		-	-	55	A
Pulsed drain-source diode forward current	I_{SM} ②		-	-	200	A

Notes:

1.T_C=25℃ Limited only by maximum temperature allowed.

2.P_W≤10μs, Duty cycle≤1%.

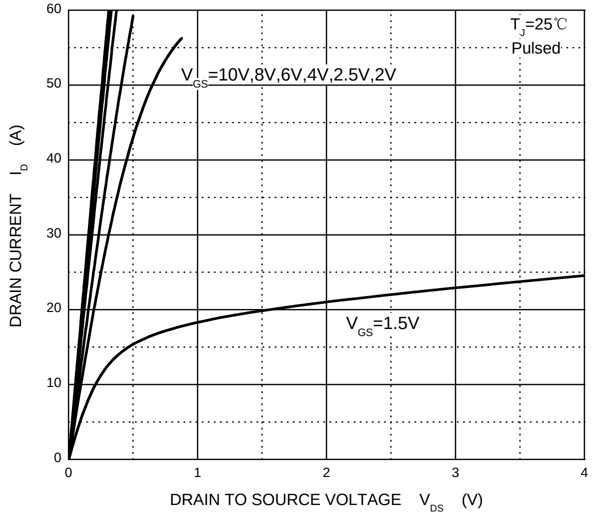
3.EAS condition: V_{DD}=10V,V_{GS}=10V, L=0.5mH, R_g=25Ω Starting T_J = 25°℃.

4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

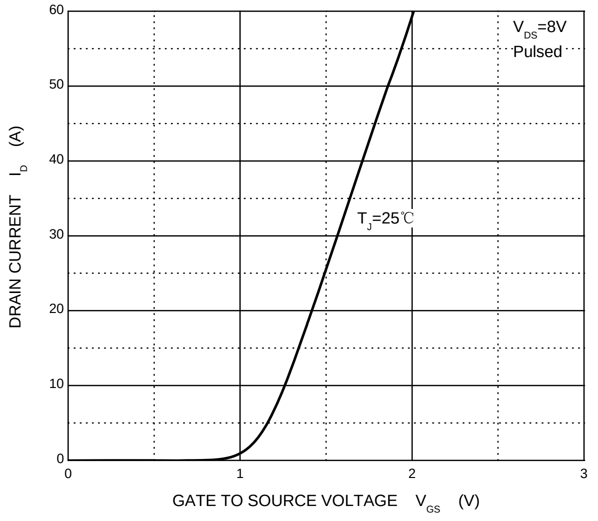
5.Guaranteed by design, not subject to production.

■ TYPICAL CHARACTERISTICS

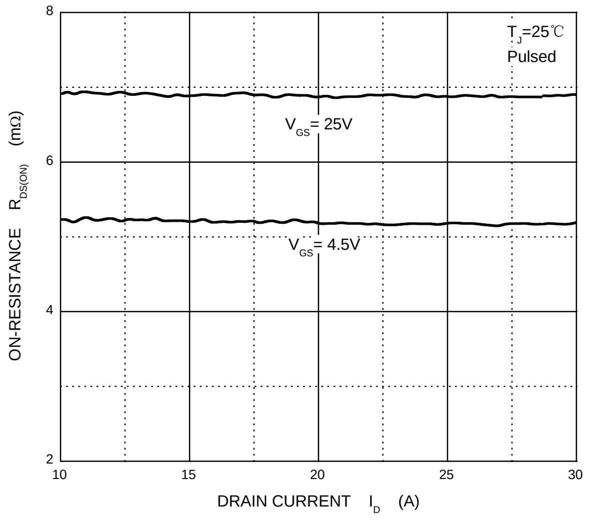
Output Characteristics



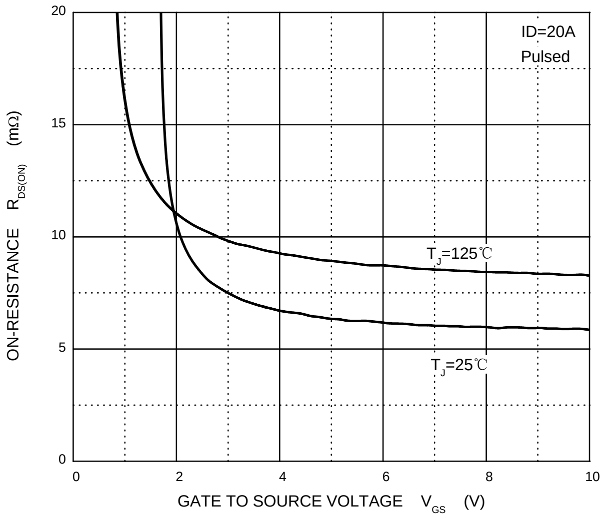
Transfer Characteristics



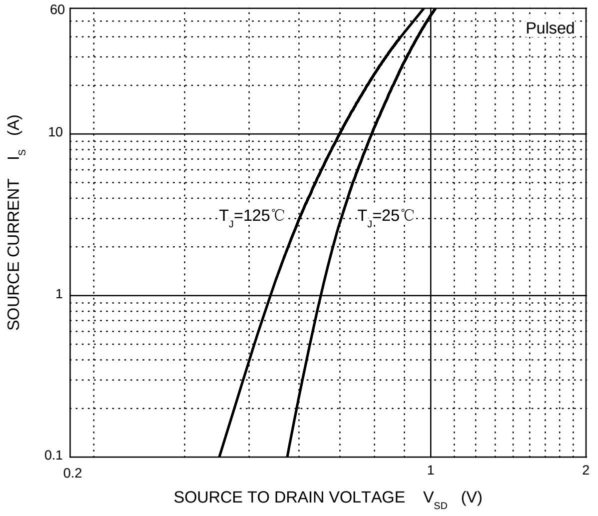
$R_{DS(ON)}$ —— I_D



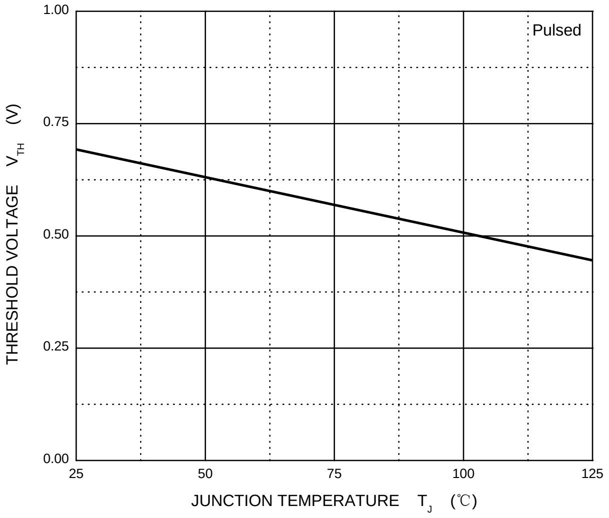
$R_{DS(ON)}$ —— V_{GS}



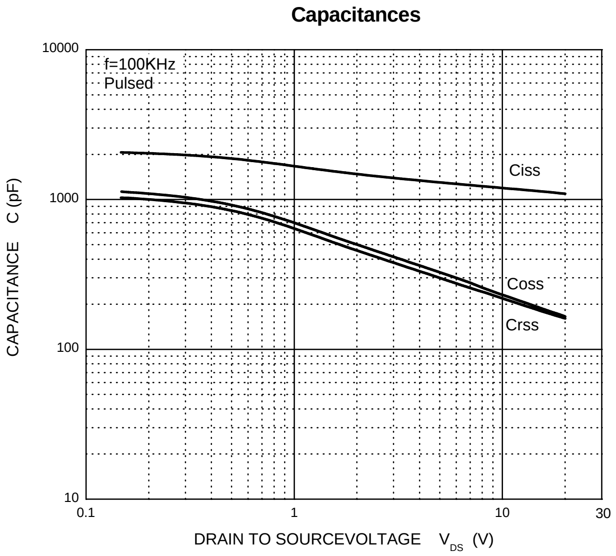
I_S —— V_{SD}

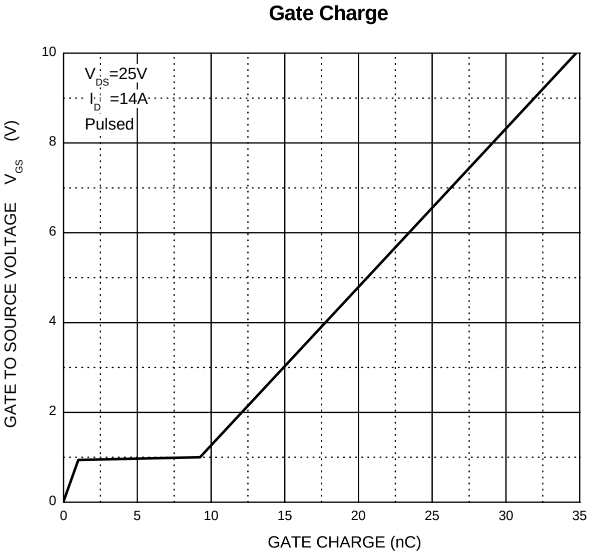


Threshold Voltage

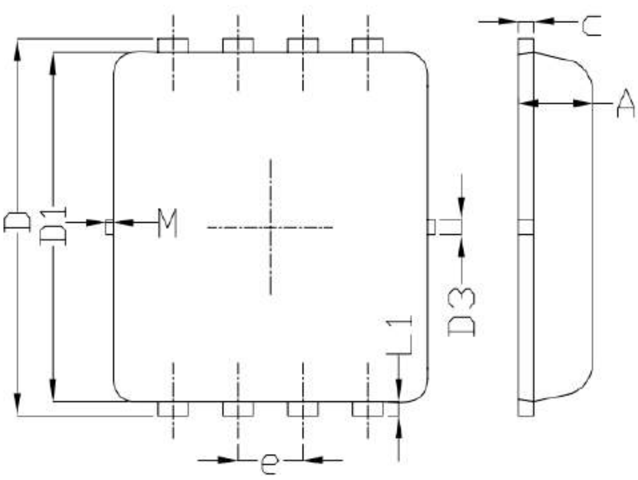


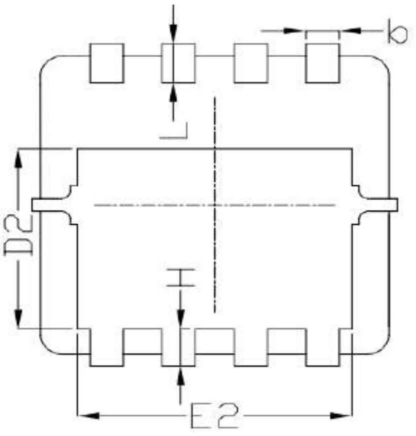
■ TYPICAL CHARACTERISTICS(Cont.)

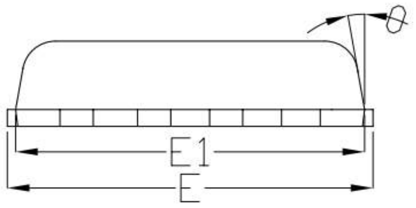




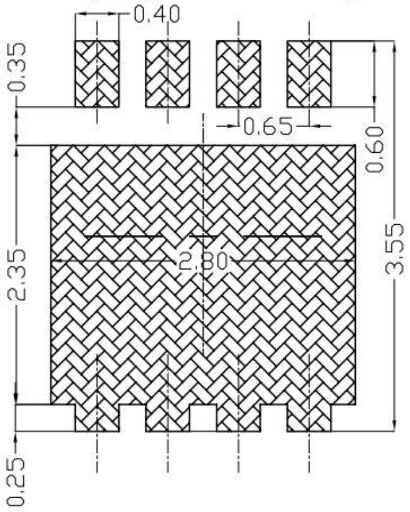
■ PDFN3X3 PACKAGE OUTLINE DIMENSIONS







Land Pattern
(Only for Reference)



SYMBOL	DIMENSIONAL REQMTS		
	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			

- The information contained hSurface-mounted package Advnced terch cell design Super trencherein is subject to change without notice.

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