

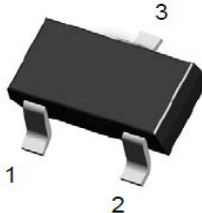
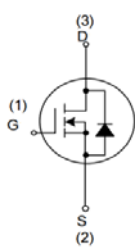
N-Channel Enhancement-Mode MOSFET (30V, 5.8A)

PRODUCT SUMMARY

V_{DS}	I_D	$R_{DS(on)}$ (m Ω) Typ.
30V	5.8A	25@ $V_{GS} = 10\text{ V}, I_D = 5.8\text{ A}$
		36@ $V_{GS} = 4.5\text{ V}, I_D = 5.0\text{ A}$
		45@ $V_{GS} = 2.5\text{ V}, I_D = 4.0\text{ A}$

Features

- Super high dense cell trench design for low $R_{DS(on)}$
- Rugged and reliable
- SOT-23 package
- Lead (Pb) -free and halogen-free

 EN3400 Pin Assignment & Symbol 3-Lead Plastic SOT-23 Pin 1: Gate Pin 2: Source Pin 3: Drain	
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Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Drain Current (Continuous)	5.8	A
I_{DM}	Drain Current (Pulsed) ^a	24	A
P_D	Total Power Dissipation @ $T_A = 25^\circ\text{C}$	1.25	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	110	$^\circ\text{C/W}$

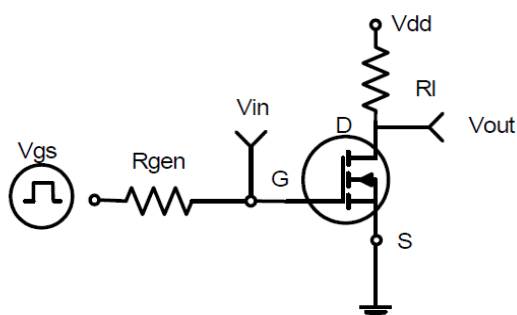
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in² 2oz Cu PCB board

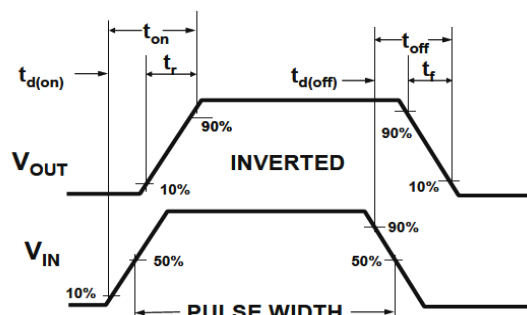
Electrical Characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
• On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	1	1.6	2	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =5.8A	-	25	32	mΩ
		V _{GS} =4.5V, I _D =5A		36	42	
		V _{GS} =2.5V, I _D =4A		45	52	
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	560	-	PF
C _{oss}	Output Capacitance		-	58	-	
C _{rss}	Reverse Transfer Capacitance		-	47	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =15V, I _D =5A, V _{GS} =10V	-	5.2	-	nC
Q _{gs}	Gate-Source Charge		-	0.9	-	
Q _{gd}	Gate-Drain Charge		-	1.6	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =15V, R _L =3Ω, I _D =1A, V _{GEN} =4.5V, R _G =3Ω	-	5	-	nS
t _r	Turn-on Rise Time		-	3	-	
t _{d(off)}	Turn-off Delay Time		-	16	-	
t _f	Turn-off Fall Time		-	4	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =-1A	-	-	-1	V

Note: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$



Switching Test Circuit



Switching Waveforms

Typical Characteristics Curves (Ta=25°C, unless otherwise note)

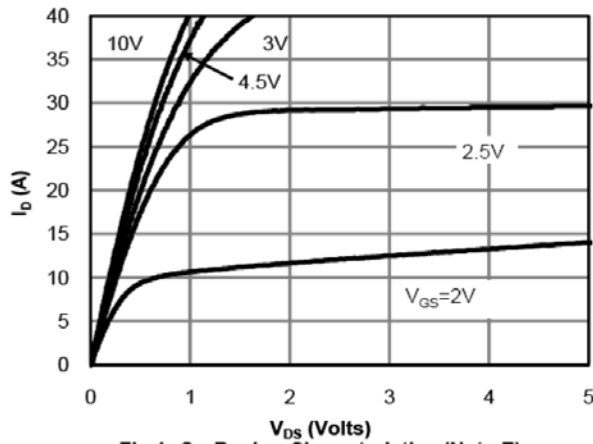


Fig 1: On-Region Characteristics (Note E)

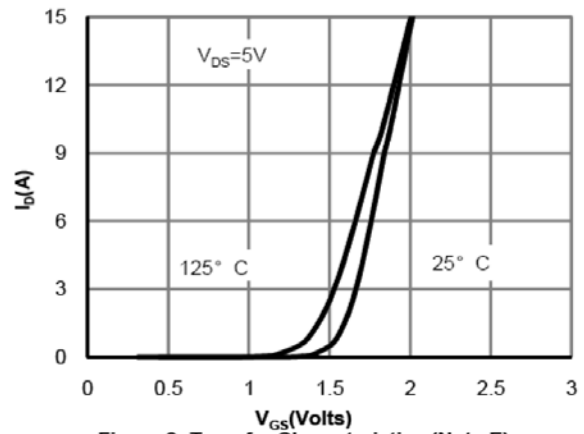


Figure 2: Transfer Characteristics (Note E)

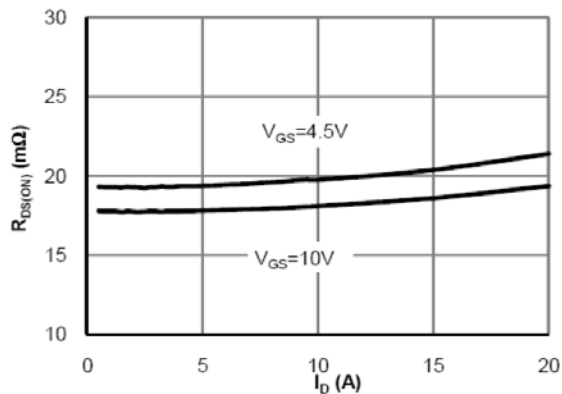


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

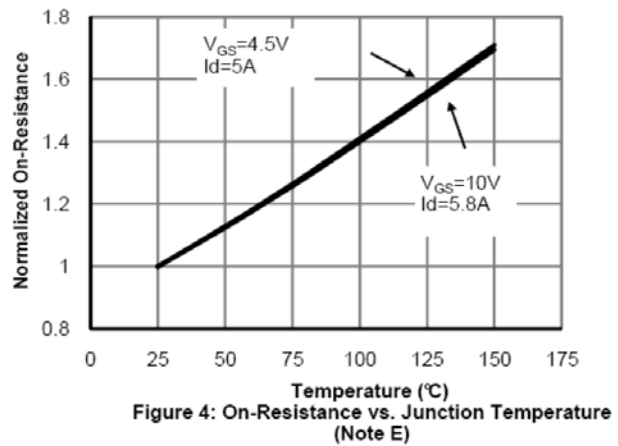


Figure 4: On-Resistance vs. Junction Temperature (Note E)

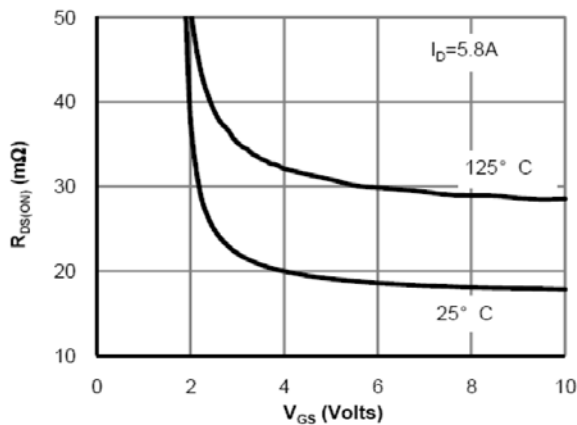


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

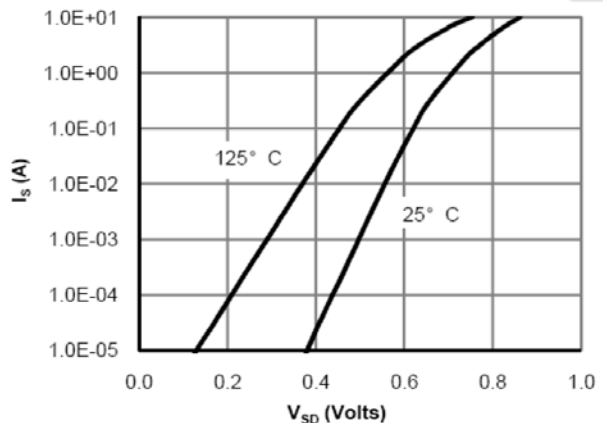


Figure 6: Body-Diode Characteristics (Note E)

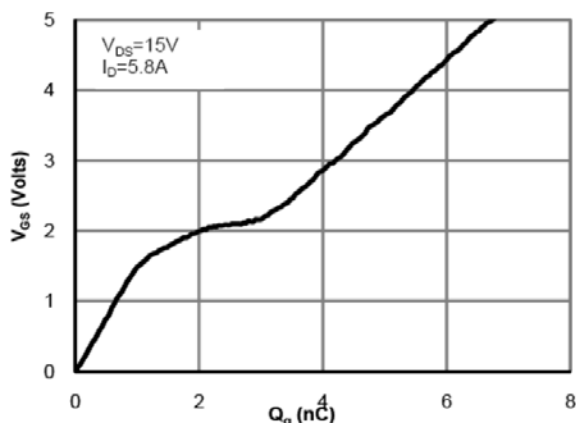


Figure 7: Gate-Charge Characteristics

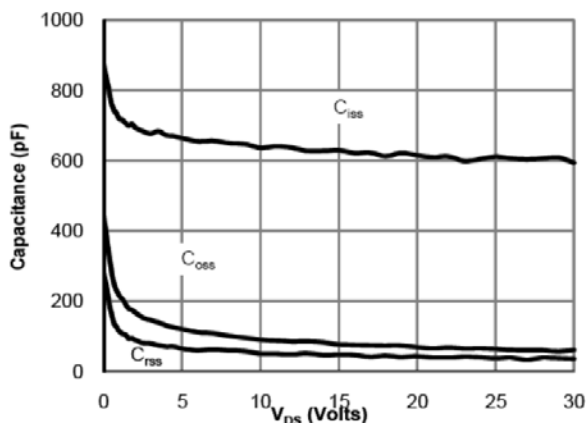


Figure 8: Capacitance Characteristics

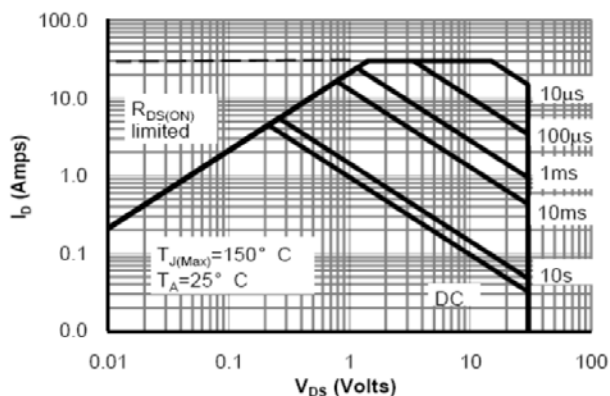


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

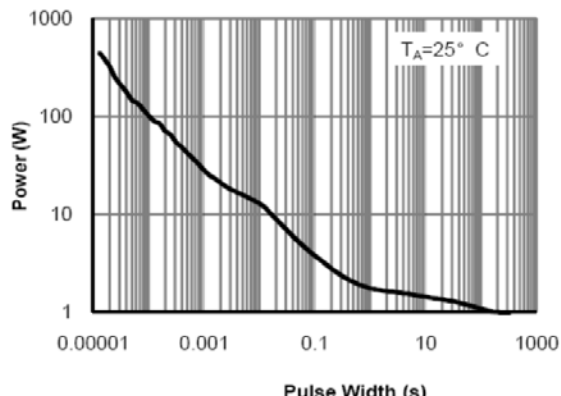


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

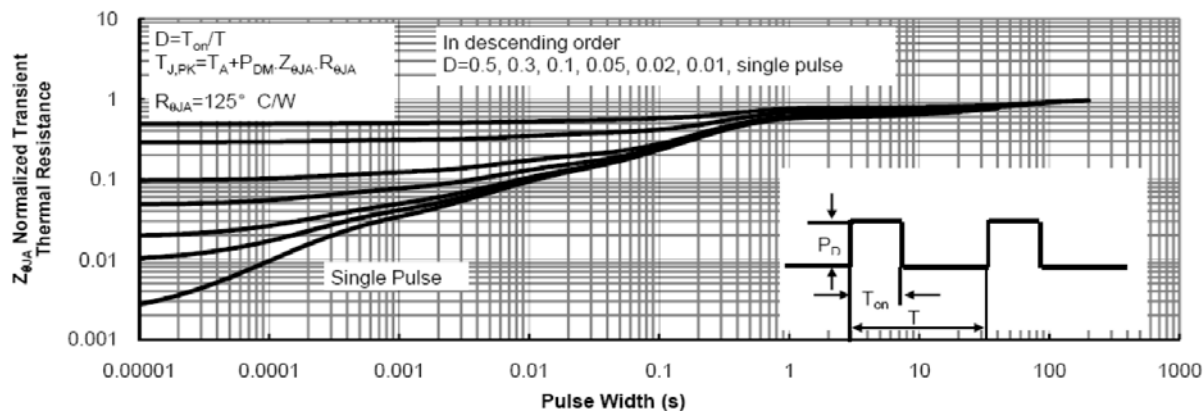
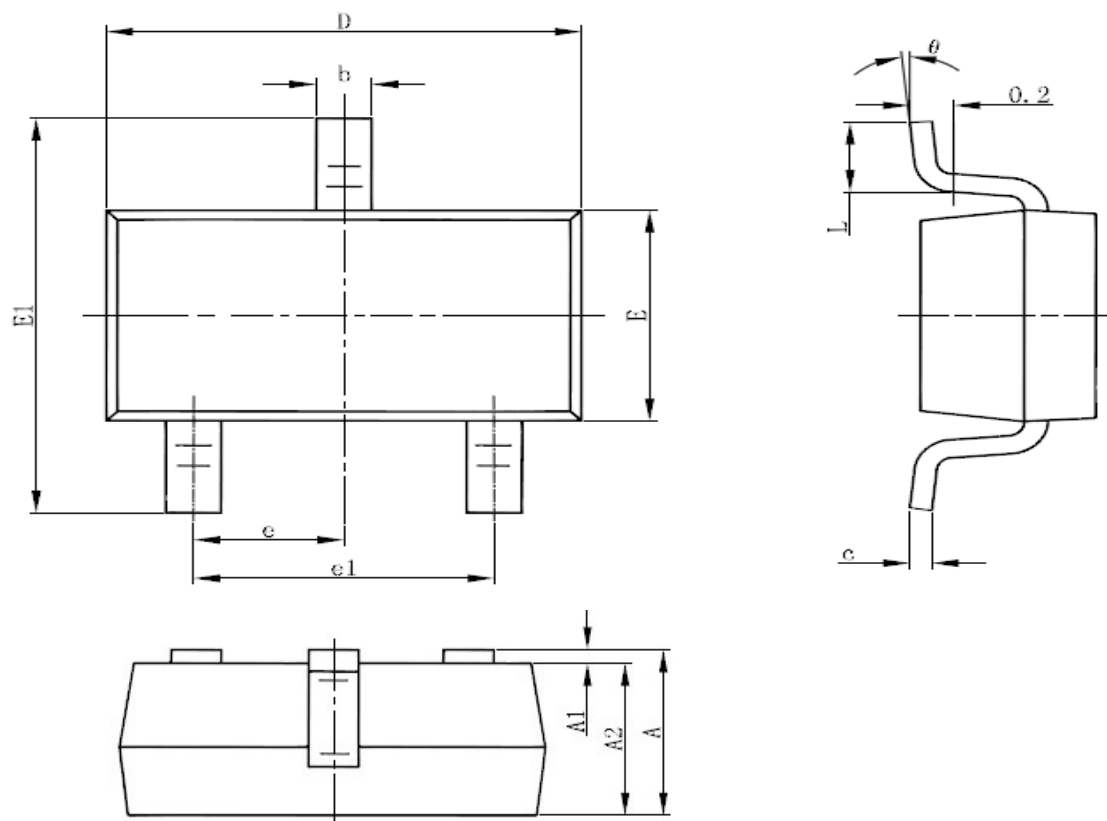


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°