

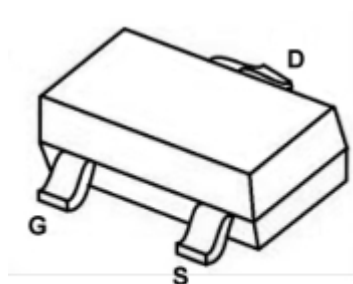
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	65mΩ@-10V	-3A
	85mΩ@-4.5V	

Feature

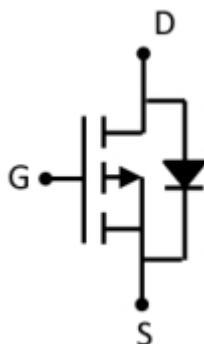
- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

Package

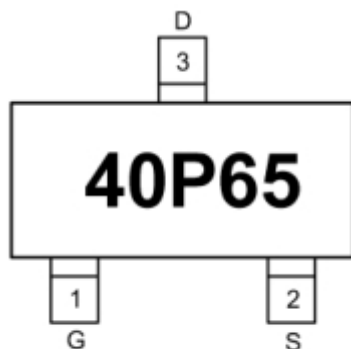


SOT-23

Circuit diagram



Marking



40P65 =Device Code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	-3	A
Pulsed Drain Current	I _{DM}	-12	A
Power Dissipation	P _D	1.5	W
Thermal Resistance from Junction to Ambient	R _{θJA}	83.3	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 To 150	°C

Electrical characteristics

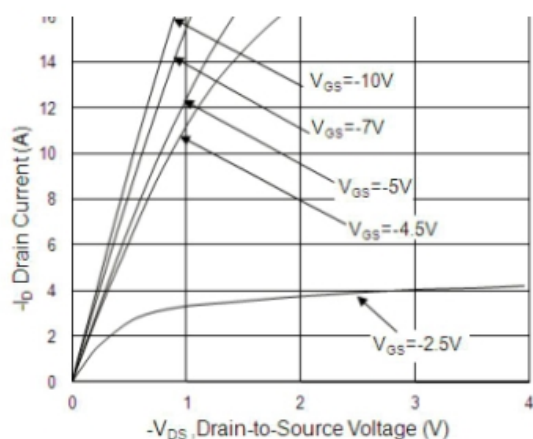
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V _{GS} = 0V, I _D = -250μA	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -40V, V _{GS} = 0V			-1	uA
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	uA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-2.5	V
Drain-Source On-Resistance ¹⁾	R _{DS(on)}	V _{GS} = -10V, I _D = -3A		65	85	mΩ
		V _{GS} = -4.5V, I _D = -2A		85	110	
Dynamic Characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} =0V, f=1MHz		620		pF
Output Capacitance	C _{oss}			65		
Reverse Transfer Capacitance	C _{rss}			53		
Total Gate Charge	Q _g	V _{DS} = -32V, , I _D = -4.5A, I _D = -3A		6.4		nC
Gate-Source Charge	Q _{gs}			2.1		
Gate-Drain Charge	Q _{gd}			2.5		
Turn-on delay time	T _{d(on)}	V _{DD} = -20V, V _{GEN} = -4.5V, I _D = -3A, R _G =3.3Ω		4.2		nS
Turn-on rise time	T _r			23		
Turn-off delay time	T _{d(off)}			26.8		
Turn-off fall time	T _f			20.6		
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S = -1A			-1	V

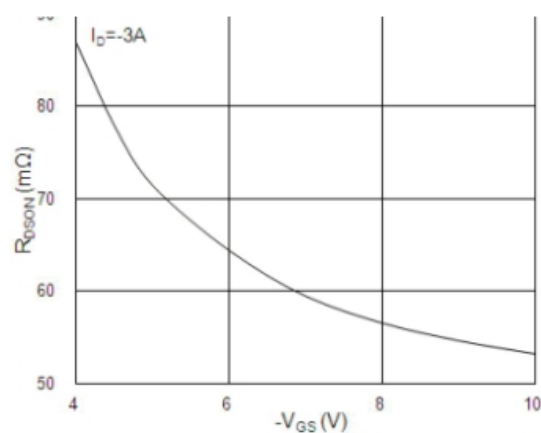
Notes:

1. Pulse Test: Pulse Width $< 300\mu s$, Duty Cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

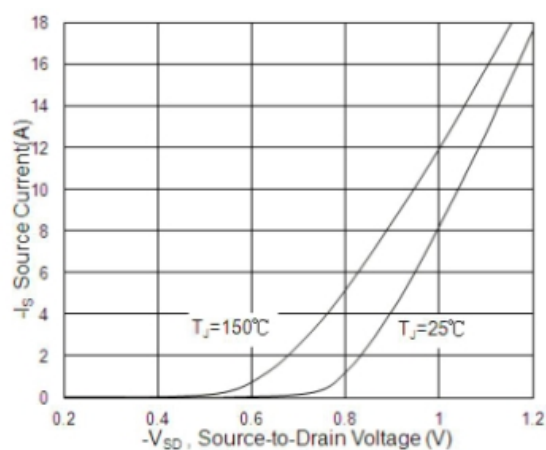
Typical Characteristics



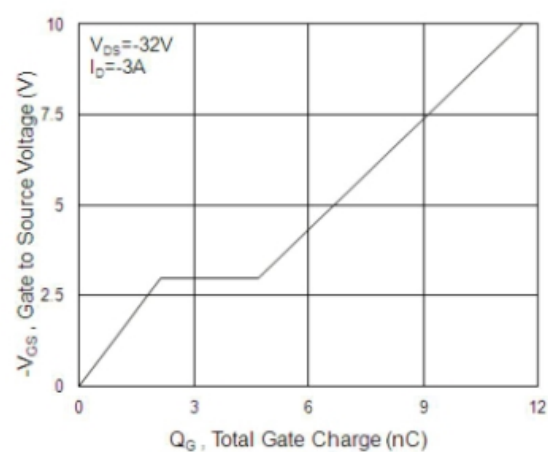
Typical Output Characteristics



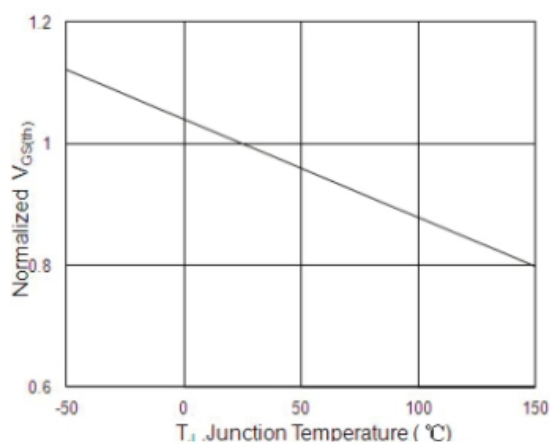
On-Resistance vs. Gate-Source



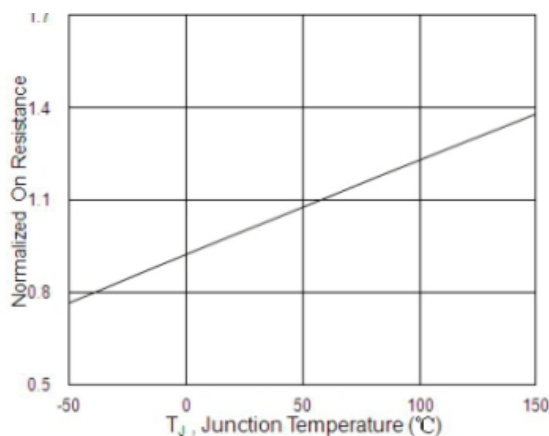
Forward Characteristics Of Reverse



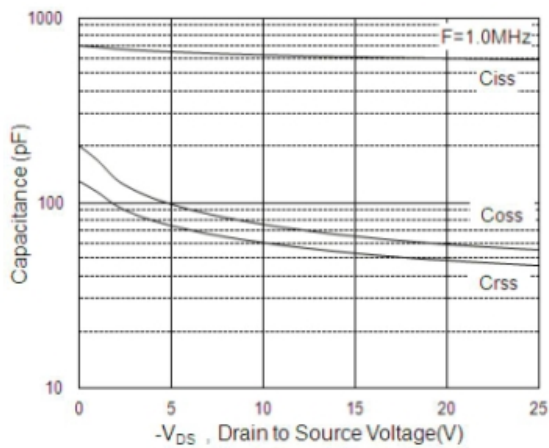
Gate-Charge Characteristics



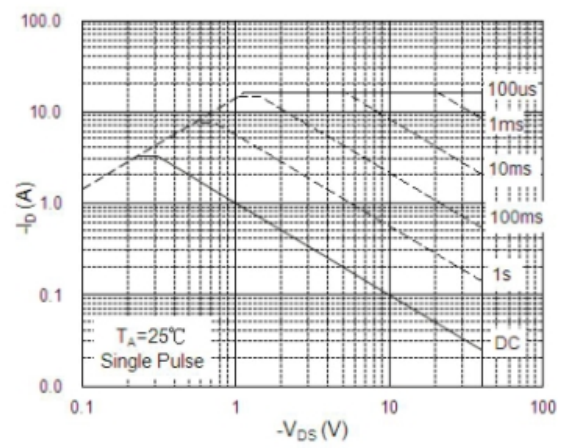
Normalized $V_{GS(th)}$ vs. T_J



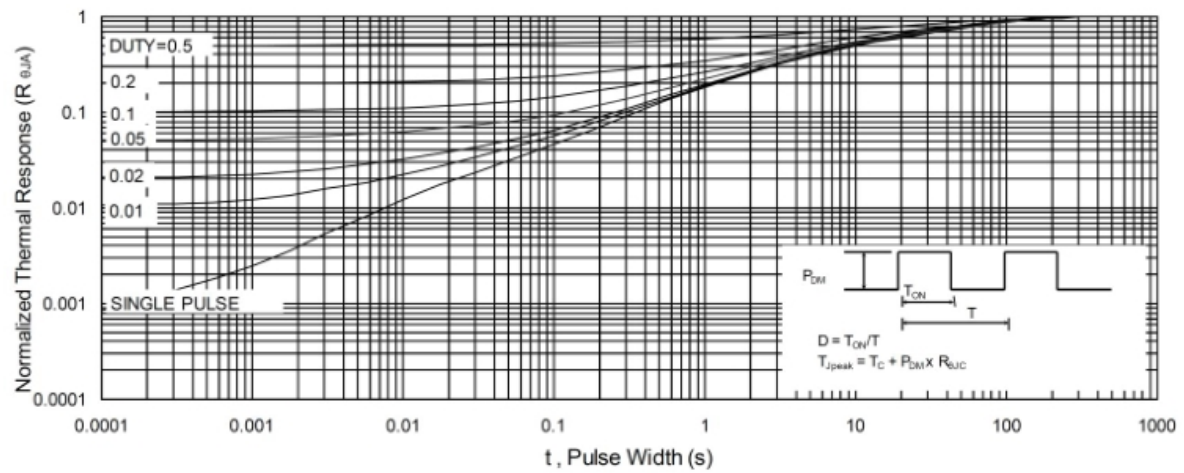
Normalized $R_{DS(on)}$ vs. T_J



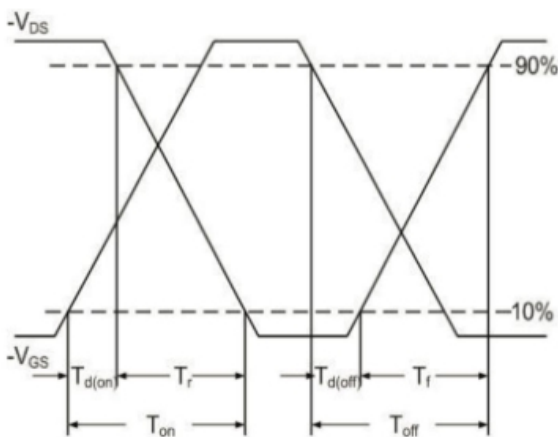
Capacitance



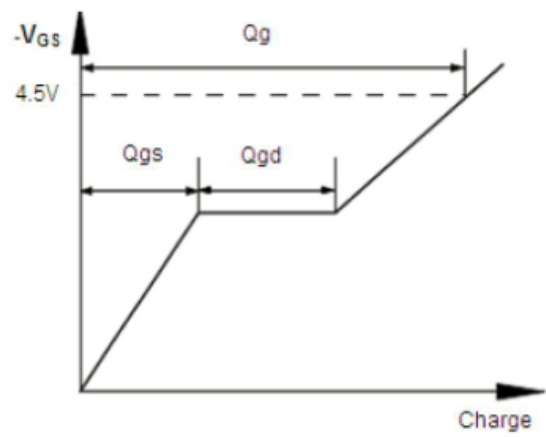
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

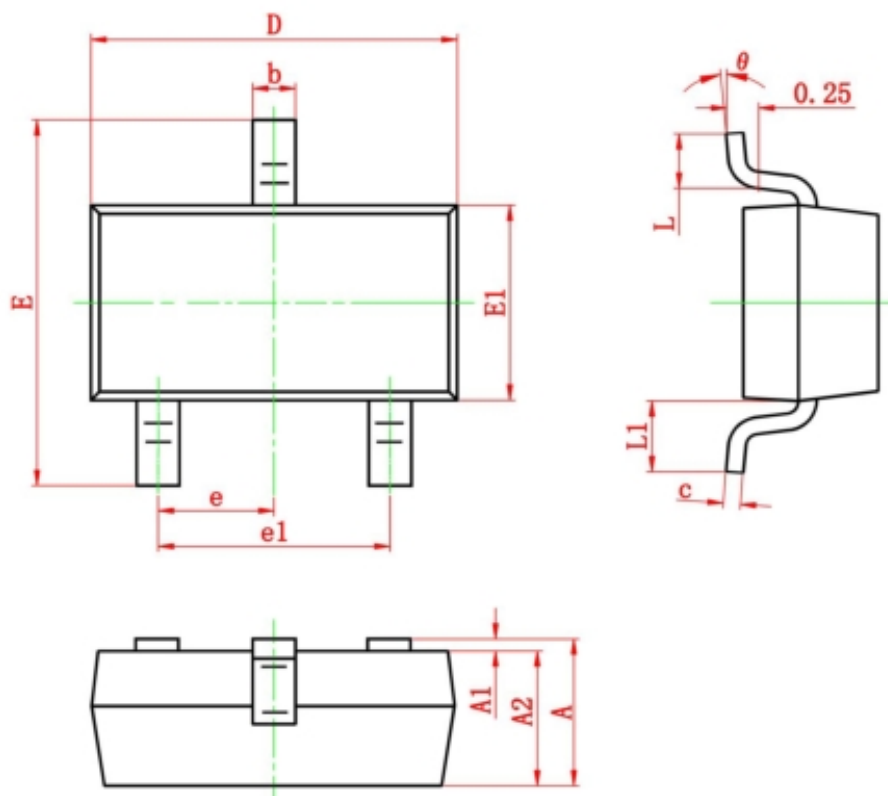


Switching Time Waveform



Unclamped Inductive Switching Waveform

SOT-23 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50
θ	0°	8°