

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D	$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	3Ω@10V	0.34A	-60V	6Ω@-10V	-0.13A
	4Ω@4.5V			7Ω@-4.5V	

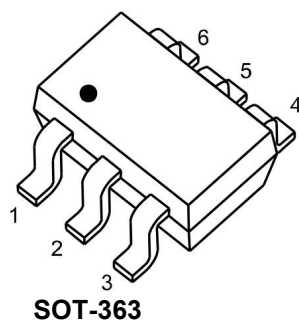
Feature

- High power and current handing capability
- Surface mount package
- ESD protected

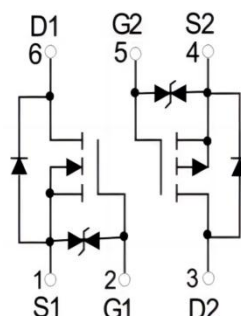
Application

- Battery Switch
- DC/DC Converter

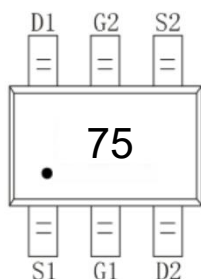
Package



Circuit diagram



Marking



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

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	60	-60	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current	I_D	0.34	-0.13	A
Pulsed Drain Current	I_{DM}	1.36	-0.52	A
Power Dissipation	P_D	0.15	0.15	W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	833	833	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	-55 ~ +150	$^{\circ}\text{C}$

N-CH 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	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =48V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.25A		1.6	3	Ω
		V _{GS} =4.5V, I _D =0.25A		1.8	4	
Dynamic characteristics ¹⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		28		pF
Output Capacitance	C _{oss}			10		
Reverse Transfer Capacitance	C _{rss}			5		
Total Gate Charge	Q _g	V _{DS} =10V,V _{GS} =4.5V, I _D =0.3A		1.7		nC
Gtae-Source Charge	Q _{gs}			0.35		
Gtae-Drain Charge	Q _{gd}			0.5		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =0.3A R _G =25Ω		3		nS
Turn-on rise time	t _r			17		
Turn-off delay time	t _{d(off)}			10		
Turn-off fall time	t _f			21		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				0.34	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =0.34A, T _J =25℃			1.2	V

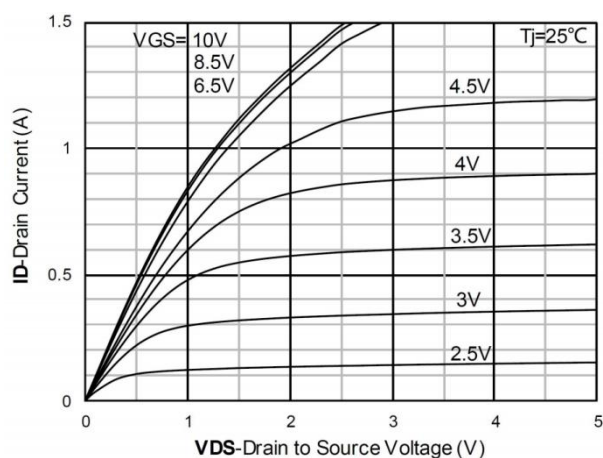
P-CH Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-48V, V _{GS} =0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.8	-2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-0.1A		4.2	6	Ω
		V _{GS} =-4.5V, I _D =-0.1A		4.5	7	
Dynamic characteristics ¹⁾						
Input Capacitance	C _{iss}	V _{DS} =-5V, V _{GS} =0V, f =1MHz		30		pF
Output Capacitance	C _{oss}			10		
Reverse Transfer Capacitance	C _{rss}			5		
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V I _D =-0.15A		1.8		nC
Gtae-Source Charge	Q _{gs}			0.5		
Gtae-Drain Charge	Q _{gd}			0.18		
Turn-on delay time	t _{d(on)}	V _{DS} =-15V, V _{GS} =-10V I _D =-0.15A, R _G =50Ω		8.6		nS
Turn-on rise time	t _r			20		
Turn-off delay time	t _{d(off)}			14		
Turn-off fall time	t _f			77		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-0.13	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =-0.13A, T _J =25℃			-1.2	V

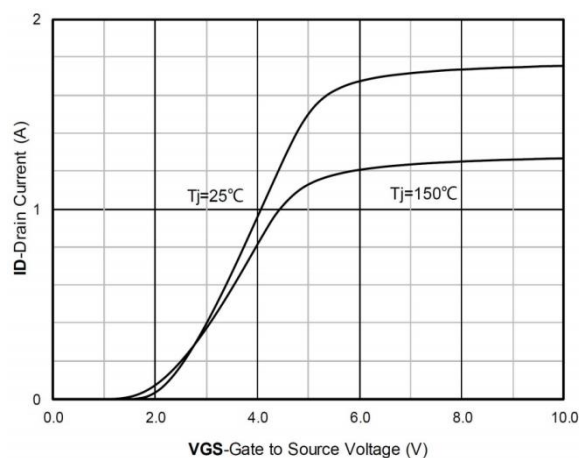
Notes:

1) Guaranteed by design, not subject to production testing.

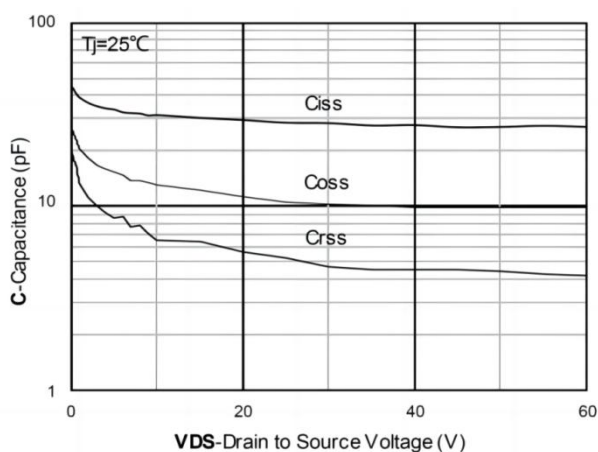
N-Channel Typical Characteristics



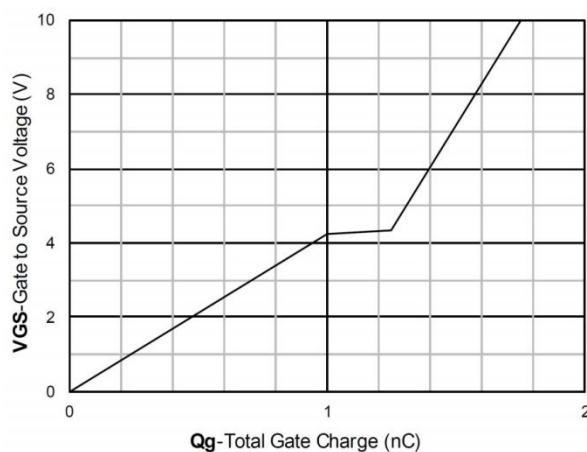
Output Characteristics



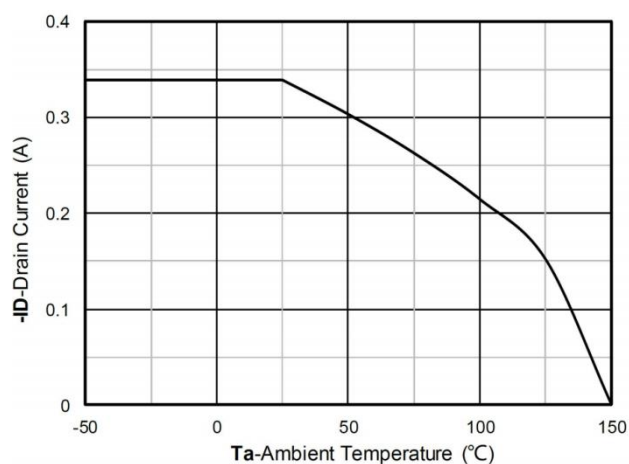
Transfer Characteristics



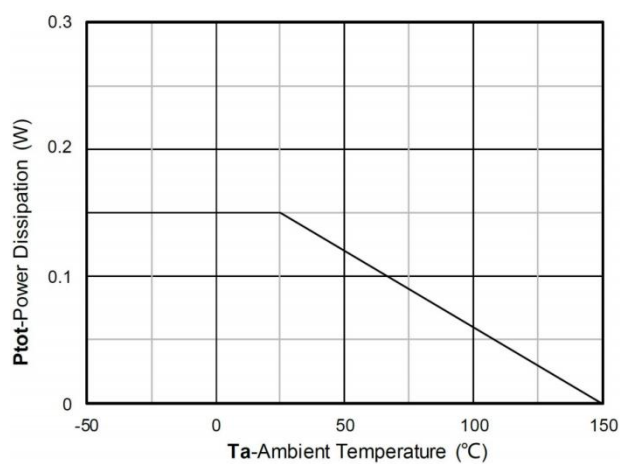
Capacitance Characteristics



Gate Charge

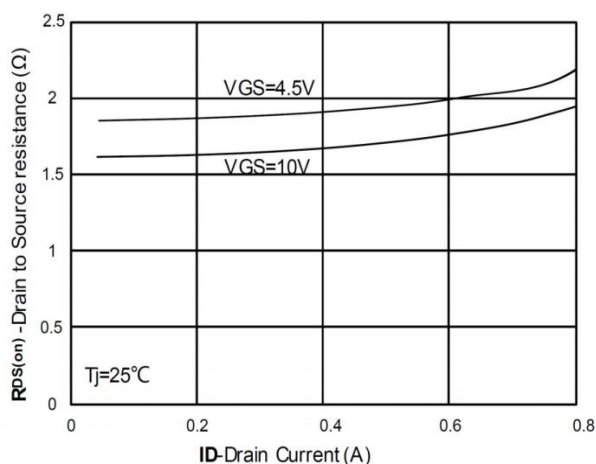


Current dissipation

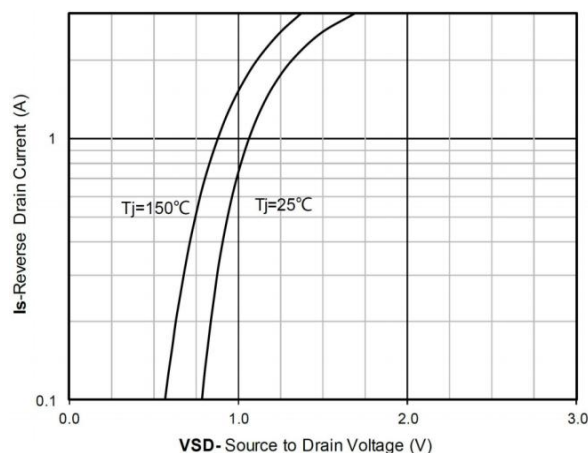


Power dissipation

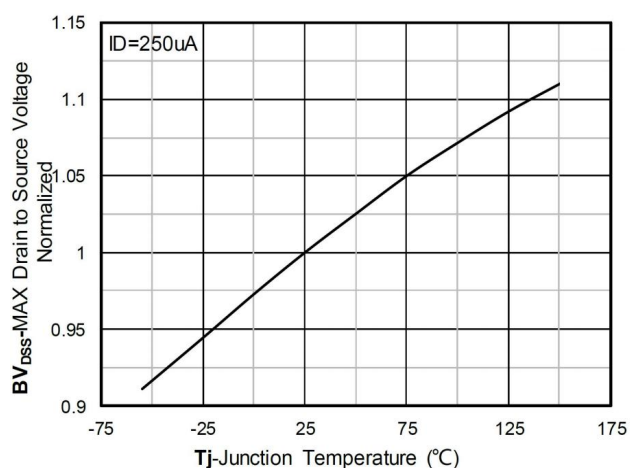
N-Channel Typical Characteristics



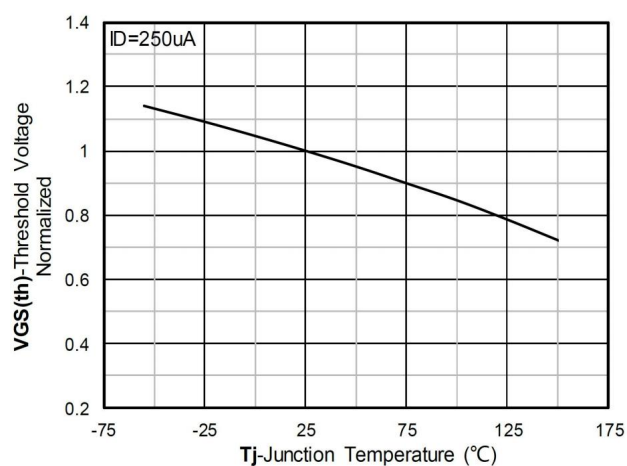
$R_{DS(on)}$ VS Drain Current



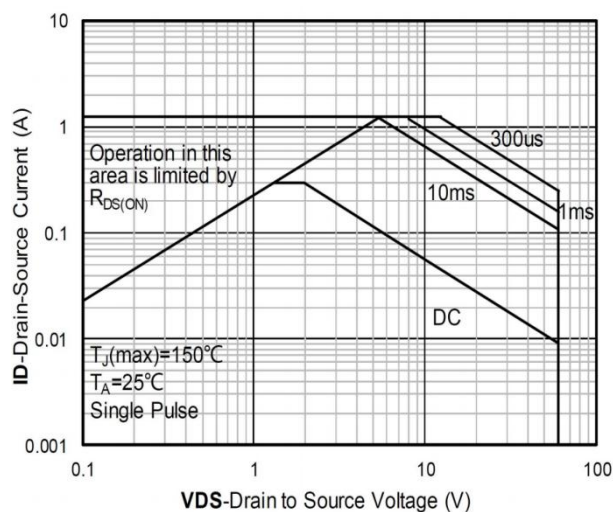
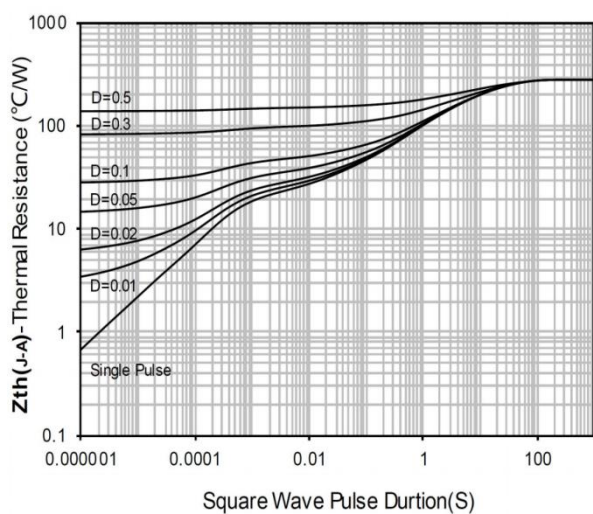
Forward characteristics of reverse diode



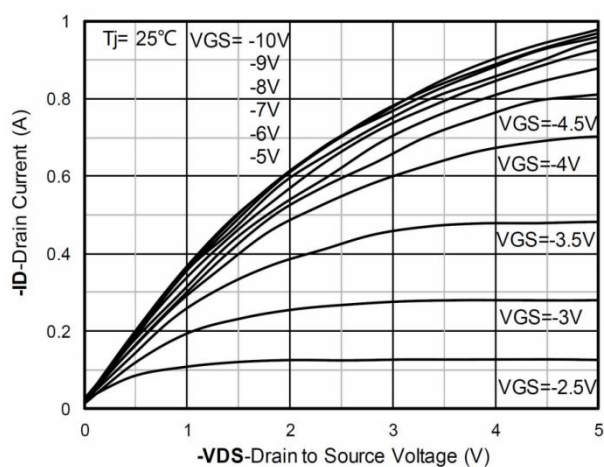
Normalized breakdown voltage



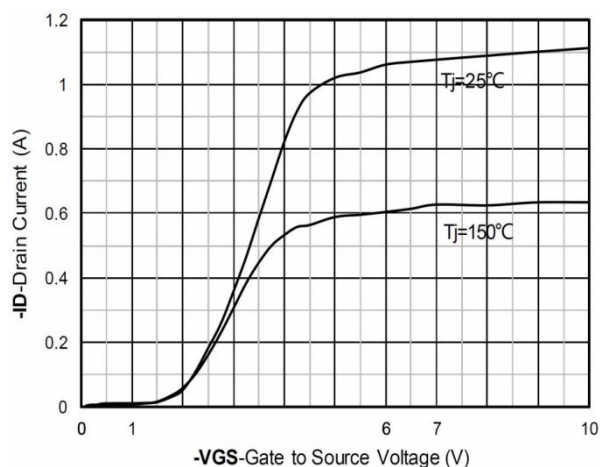
Normalized Threshold voltage



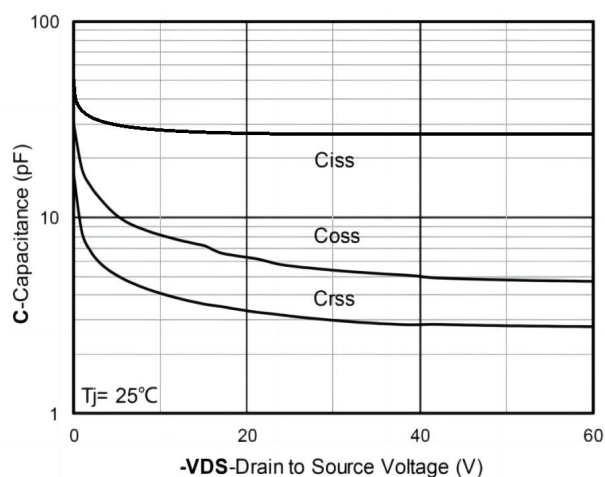
P-Channel Typical Characteristics



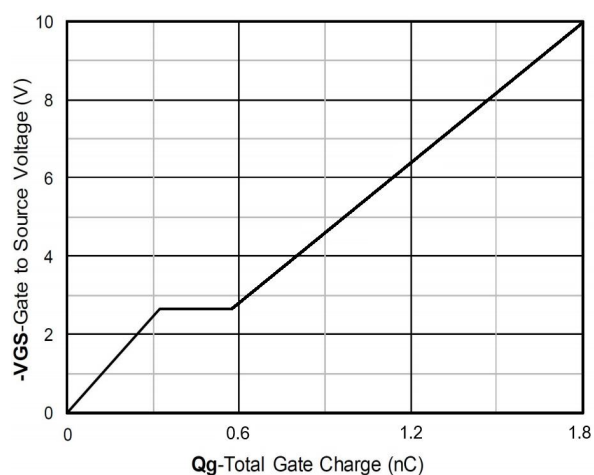
Output Characteristics



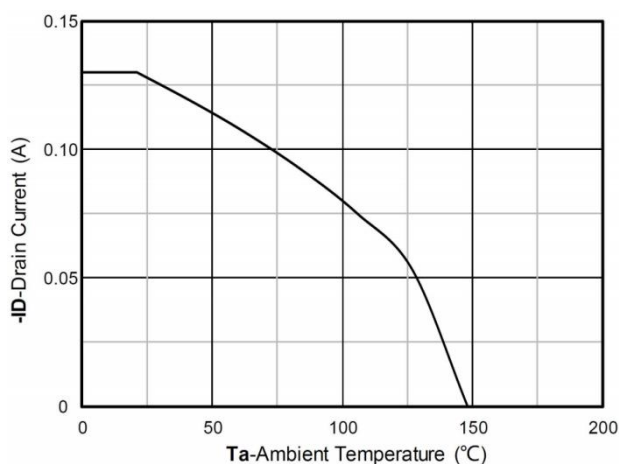
Transfer Characteristics



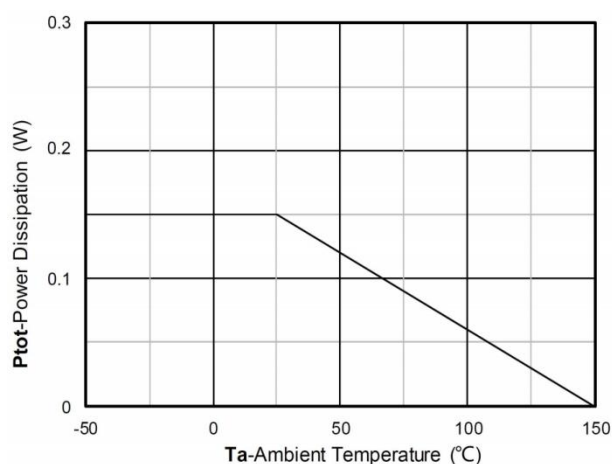
Capacitance Characteristics



Gate Charge

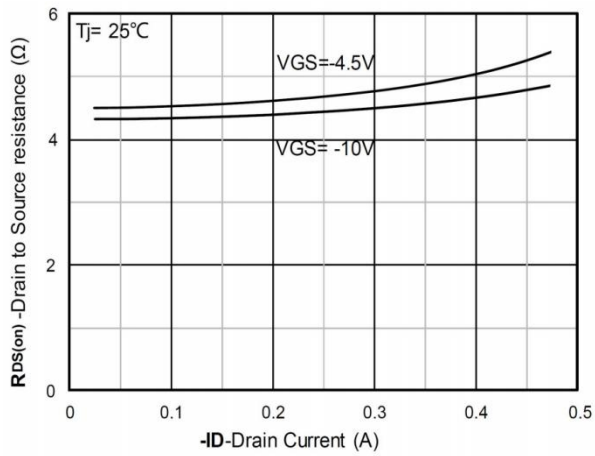


Current dissipation

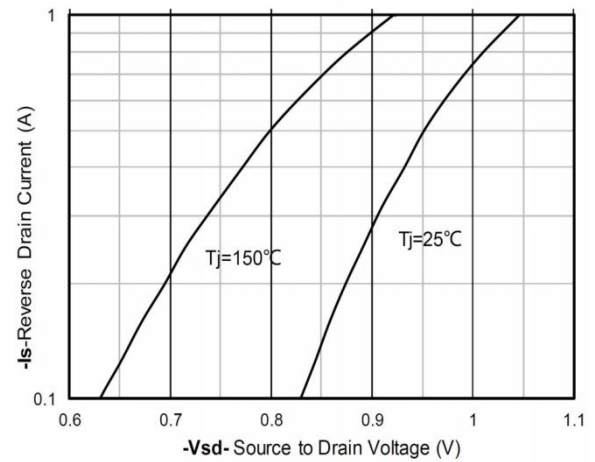


Power dissipation

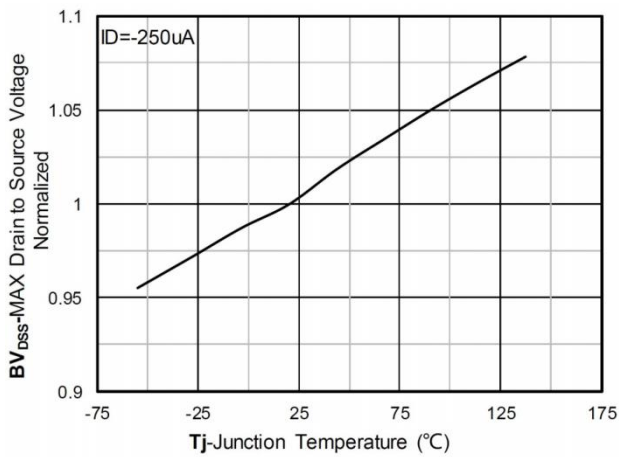
P-Channel Typical Characteristics



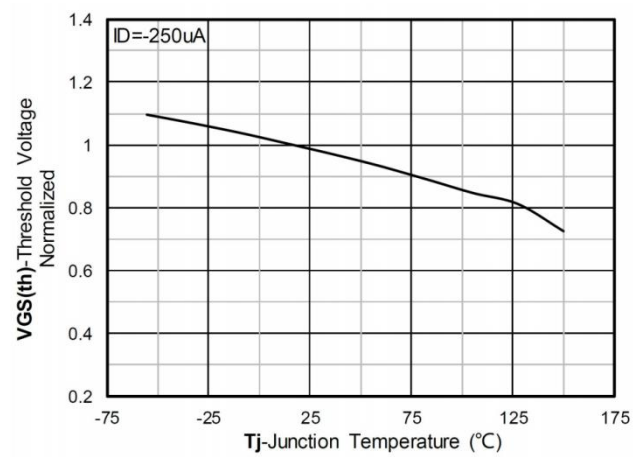
RDS(on) VS Drain Current



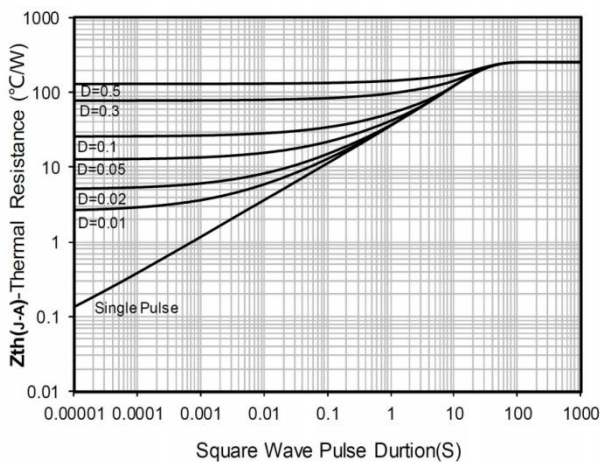
Forward characteristics of reverse diode



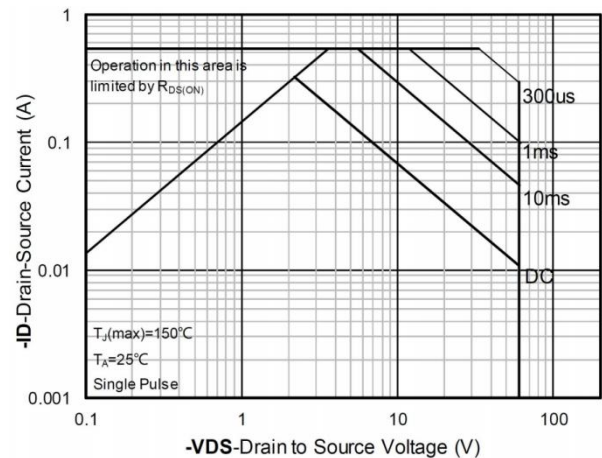
Normalized breakdown voltage



Normalized Threshold voltage

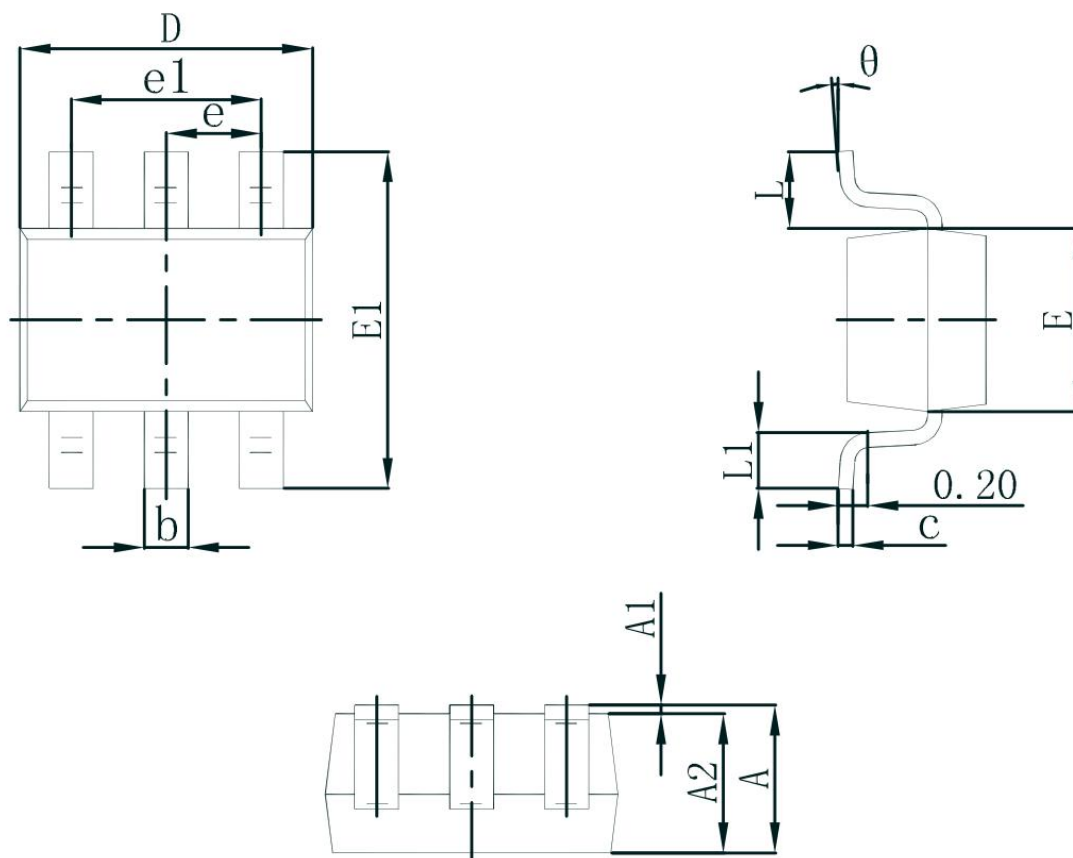


Maximum Transient Thermal Impedance



Safe Operation Area

SOT-363 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.100	0.350	0.004	0.014
c	0.100	0.250	0.004	0.010
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.045	0.053
E1	2.000	2.300	0.078	0.090
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°