

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

FEATURES

- Low $R_{DS(on)}$ trench technology.
- Low thermal impedance.
- Fast switching speed.

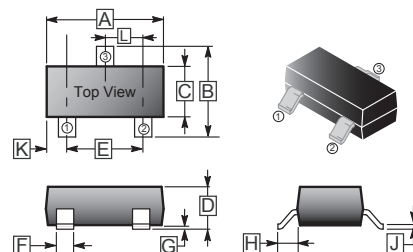
APPLICATIONS

- PoE Power Sourcing Equipment
- PoE Powered Devices
- Telecom DC/DC converters.
- White LED boost converters.

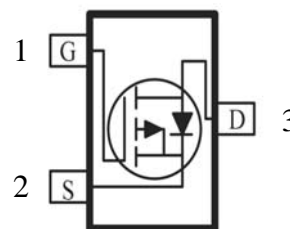
PACKAGE INFORMATION

Package	MPQ	LeaderSize
SC-59	3K	7' inch

SC-59



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10	REF.
B	2.25	3.00	H	0.40	REF.
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	$T_A = 25^\circ\text{C}$	-1
		$T_A = 70^\circ\text{C}$	-0.8
Pulsed Drain Current ²	I_{DM}	-10	A
Continuous Source Current (Diode Conduction) ¹	I_S	-1.6	A
Power Dissipation ¹	P_D	$T_A = 25^\circ\text{C}$	1.3
		$T_A = 70^\circ\text{C}$	0.8
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 150	$^\circ\text{C}$
Thermal Resistance Data			
Maximum Junction to Ambient ¹	$t \leq 10 \text{ sec}$	$R_{\theta JA}$	100
	Steady-State		166

Notes:

1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

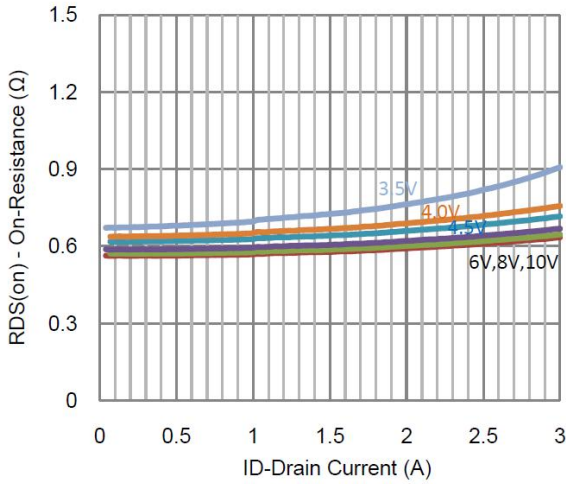
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1	-	-3.5	V	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$
Gate-Body Leakage	I_{GSS}	-	-	± 100	nA	$V_{DS}=0, V_{GS}=\pm 20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS}=-80\text{V}, V_{GS}=0$
		-	-	-25		$V_{DS}=-80\text{V}, V_{GS}=0, T_J=55^\circ\text{C}$
On-State Drain Current ¹	$I_{D(ON)}$	-10	-	-	A	$V_{DS}=-10\text{V}, V_{GS}=-10\text{V}$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	1.2	Ω	$V_{GS}=-10\text{V}, I_D=-1\text{A}$
		-	-	1.3		$V_{GS}=-4.5\text{V}, I_D=-0.9\text{A}$
Forward Transconductance ¹	g_{FS}	-	5	-	S	$V_{DS}=-15\text{V}, I_D=-1\text{A}$
Diode Forward Voltage	V_{SD}	-	-0.81	-	V	$I_S=-0.8\text{A}, V_{GS}=0$
Dynamic ²						
Total Gate Charge	Q_g	-	3.7	-	nC	$I_D=-1\text{A}$ $V_{DS}=-50\text{V}$ $V_{GS}=-4.5\text{V}$
Gate-Source Charge	Q_{gs}	-	1.1	-		
Gate-Drain Charge	Q_{gd}	-	1.7	-		
Turn-On Delay Time	$T_{d(ON)}$	-	3.5	-	nS	$V_{DD}=-50\text{V}$ $V_{GEN}=-10\text{V}$ $R_L=50\Omega$ $I_D=-1\text{A}$ $R_{GEN}=6\Omega$
Rise Time	T_r	-	3.8	-		
Turn-Off Delay Time	$T_{d(OFF)}$	-	15.5	-		
Fall Time	T_f	-	10.3	-		
Input Capacitance	C_{iss}	-	358	-	pF	$f=1\text{MHz}$ $V_{DS}=-15\text{V}$ $V_{GS}=0$
Output Capacitance	C_{oss}	-	54	-		
Reverse Transfer Capacitance	C_{rss}	-	29	-		

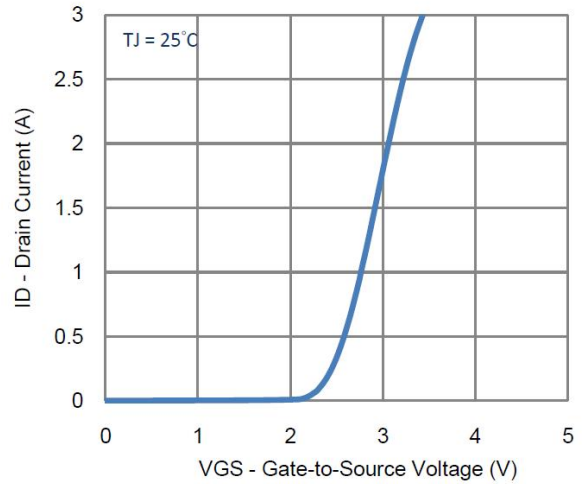
Notes:

1. Pulse test : $PW \leq 300 \mu\text{s}$ duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

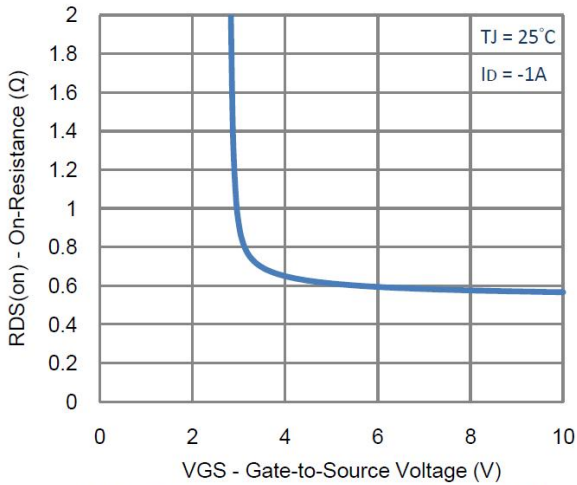
CHARACTERISTIC CURVE



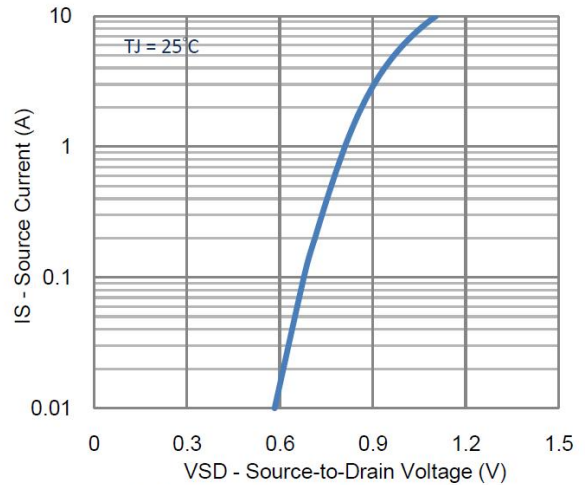
1. On-Resistance vs. Drain Current



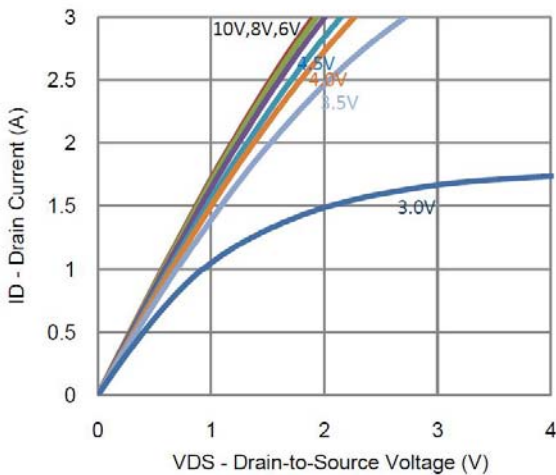
2. Transfer Characteristics



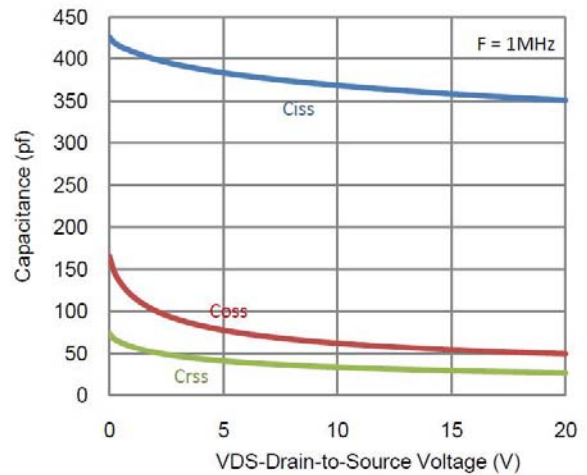
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

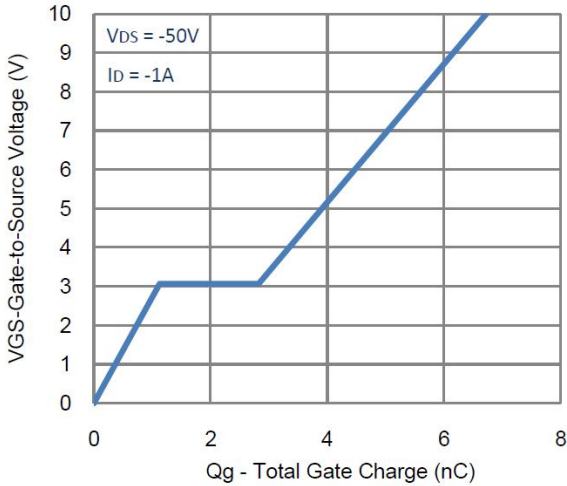


5. Output Characteristics

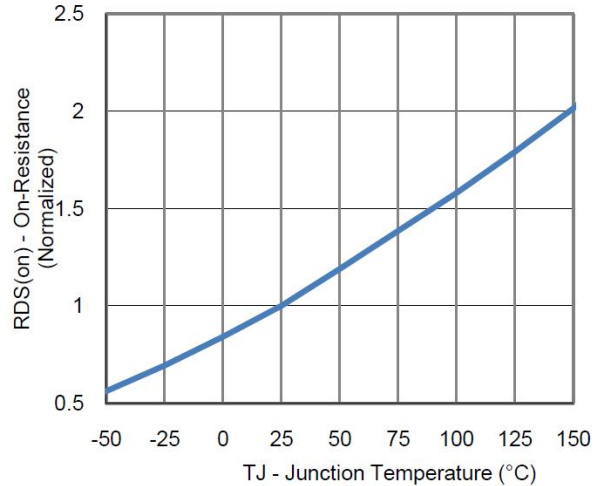


6. Capacitance

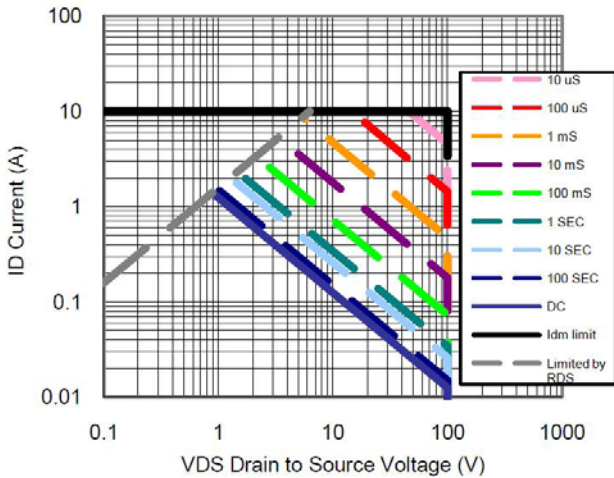
CHARACTERISTIC CURVE



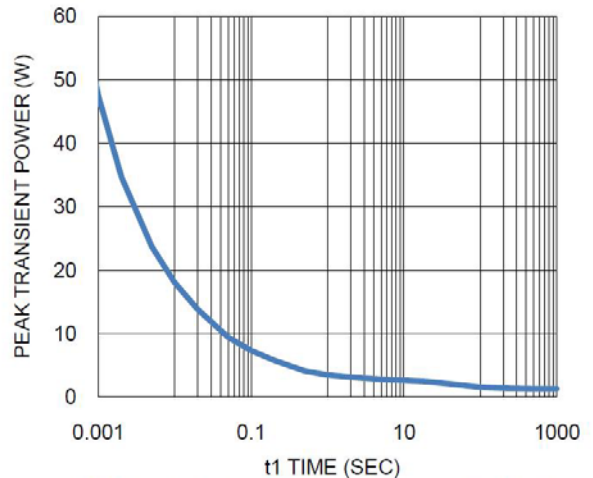
7. Gate Charge



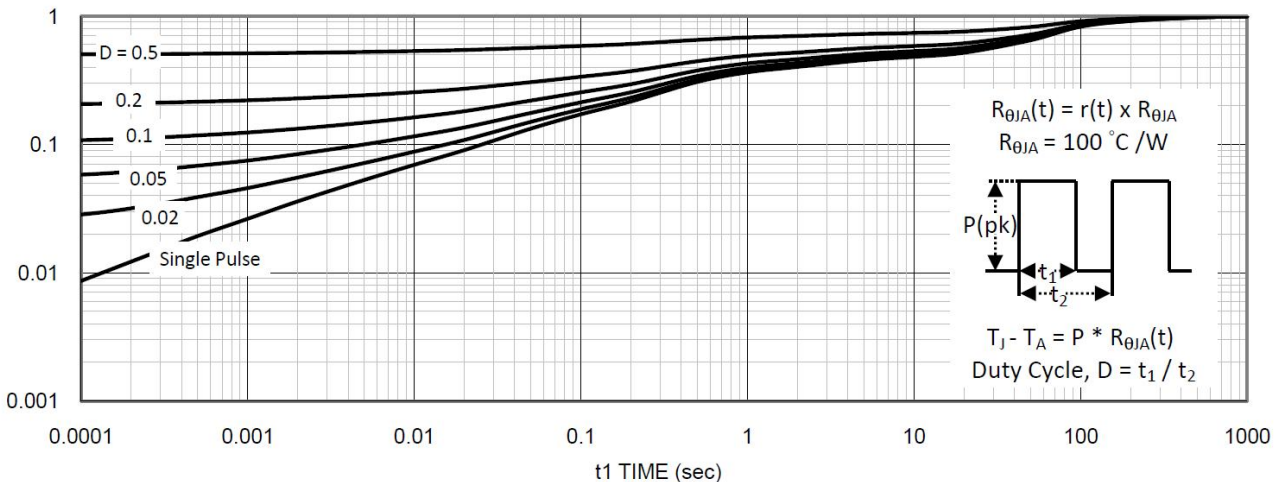
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient